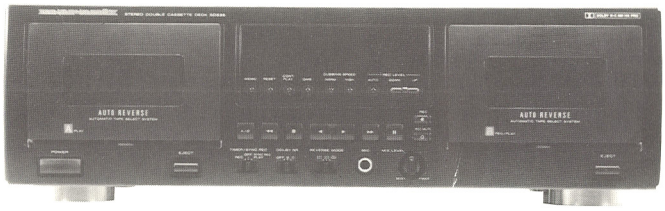
Service Manual

74 SD535 /01B/02B/05B/07B /01G/02G

Stereo double cassette deck



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marantz®

model SD535

4822 725 51075
First issue : 1994 / 10
PCS 79 726

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

BELGIUM
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

CHILE
MARANTZ DIVISION OF
PHILIPS S.A.
Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

DENMARK
MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

FINLAND
MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

GERMANY
MARANTZ GERMANY GmbH
Kleine Heide 12
Postfach 4802
Halle-Westfalen
Germany

GREAT BRITAIN
MARANTZ HiFi UK Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 OEH,
U.K.

GREECE
ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

JAPAN
MARANTZ JAPAN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

PORTUGAL
COREL
Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

SOUTH AFRICA
MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

SPAIN
MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country.
In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. TECHNICAL SPECIFICATIONS (DIN)

Motor (s) and type ..... 1 DC
Number of heads 2

Frequency range (3 dB limits ~ no Dolby)
- Type IV (metal) tape ..... 40 Hz ~ 15 kHz
- Type II (CrO_2) tape ..... 40 Hz ~ 15 kHz
- Type I (Fe/Normal) tape ..... 40 Hz – 13 kHz

Signal to noise ratio (CrO_2 tape at 1 kHz) (no Dolby NR/Dolby B and C NR) ..... 58/67/72 dB
Wow and flutter 0.1%
Output level/impedance ..... 570 mV/3k ohm

Dimensions
- Width ..... 426 mm
- Height ..... 132 mm
- Depth ..... 314 mm
- Weight ..... 5.1 kg

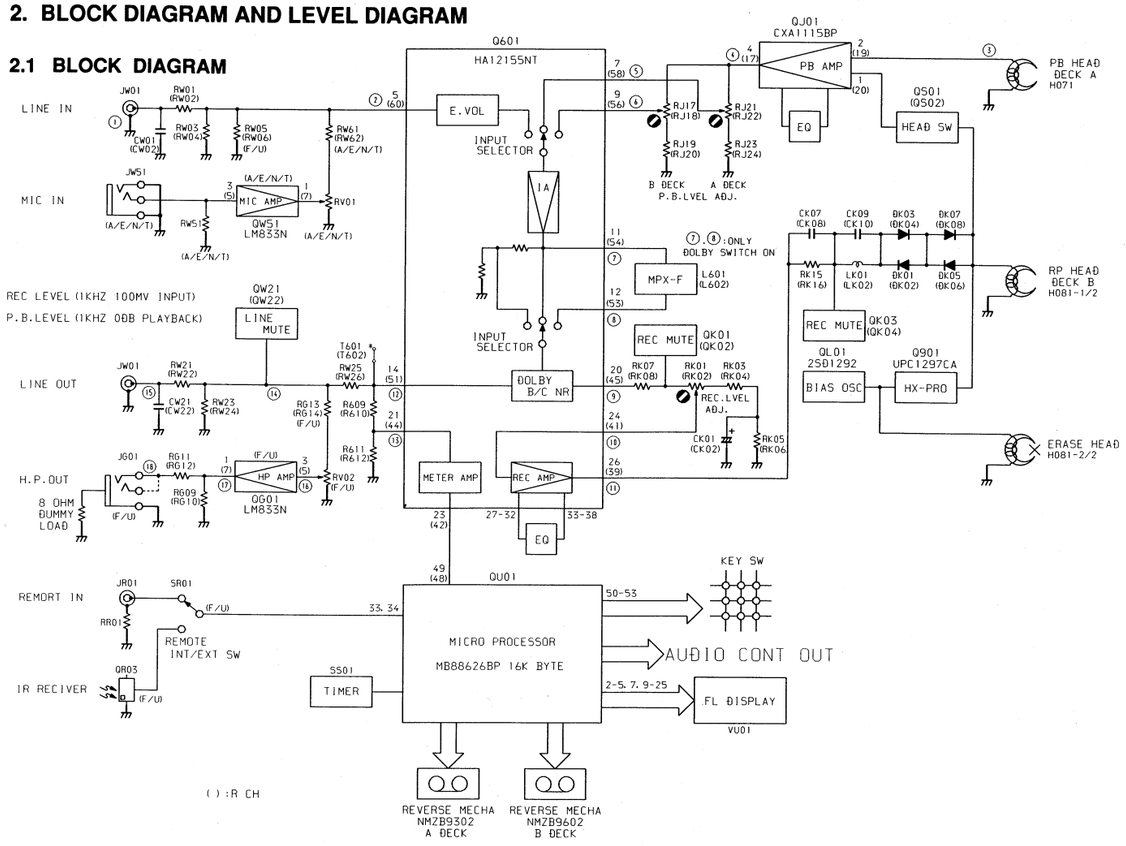
General
Power Supply
- /01 Version ..... 115V/230V 50/60 Hz
- /02 Version ..... 230V 50 Hz
- /05/07 Version ..... 240V 50 Hz
- F Version ..... 100V 50/60 Hz
- U Version ..... 120V 60 Hz

Power Consumption 12W

Specifications subject to change without prior notice.

2. BLOCK DIAGRAM AND LEVEL DIAGRAM

2.1 BLOCK DIAGRAM



2.2 LEVEL DIAGRAM

REC LEVEL

MEASURMENT POINT NO.	UNIT mV	UNIT dBV
①	100	-20.4
②	48	-26.4
⑦	491	-6.2
⑧	341	-9.3
⑨	424	-7.5
⑩	121	-18.3
⑪	950	-0.4
⑫	663	-3.6
⑬	424	-7.5
⑭	588	-4.6
⑮	576	-4.8
⑯	90	-20.9
⑰	1540	3.8
⑱	160	-15.9

P. B LEVEL

MEASURMENT POINT NO.	UNIT mV	UNIT dBV
③	0.2	-74.0
④	59	-24.6
⑤	34	-29.4
⑥	34	-29.4
⑦	344	-9.3
⑫	663	-3.6
⑬	424	-7.5
⑭	588	-4.6
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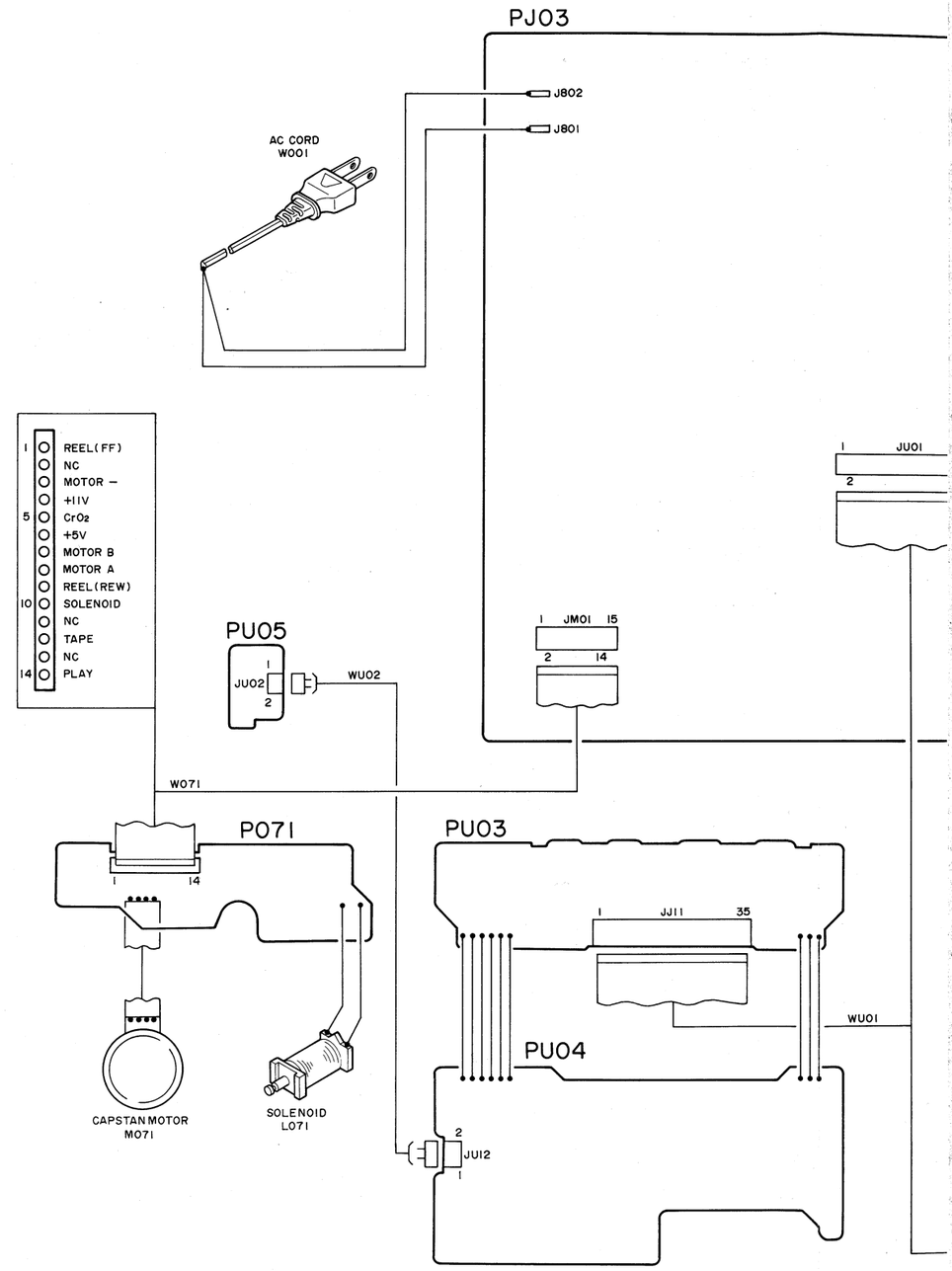
3. CONNECTION DIAGRAM

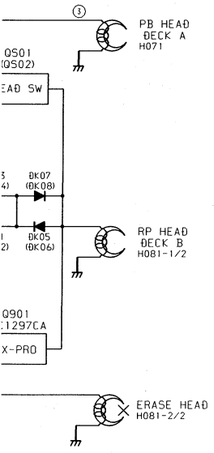


.....1 DC
.....2

: ~ 15 kHz
: ~ 15 kHz
: – 13 kHz
V/67/72 dB
.....0.1%
V/3k ohm

..426 mm
..132 mm
..314 mm
.....5.1 kg

50/60 Hz
0V 50 Hz
0V 50 Hz
50/60 Hz
0V 60 Hz
.....12W



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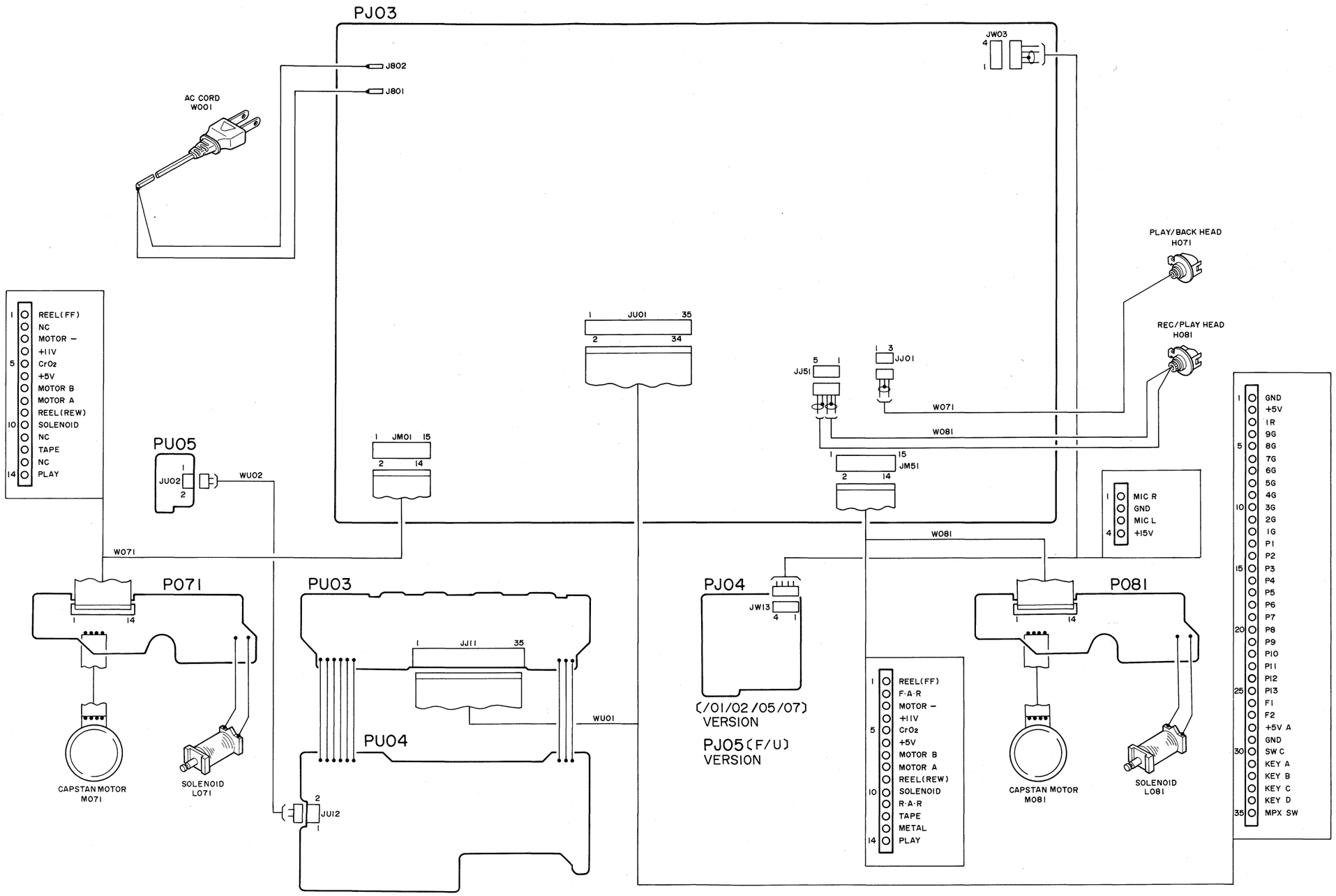
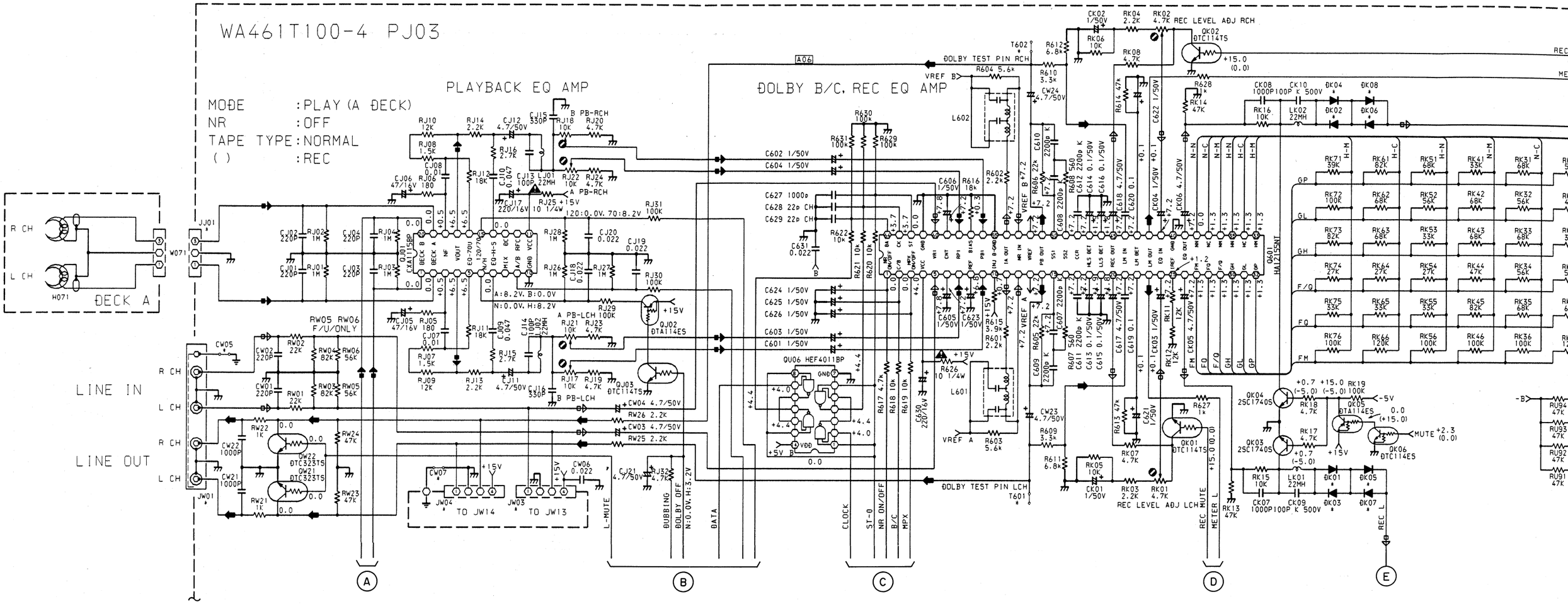
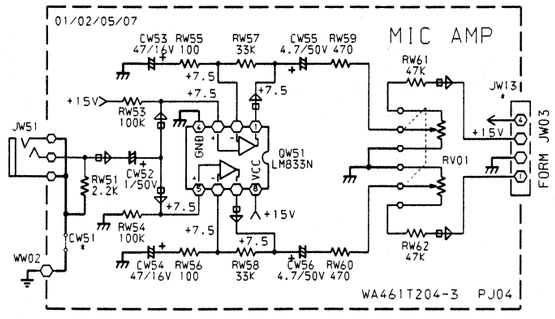
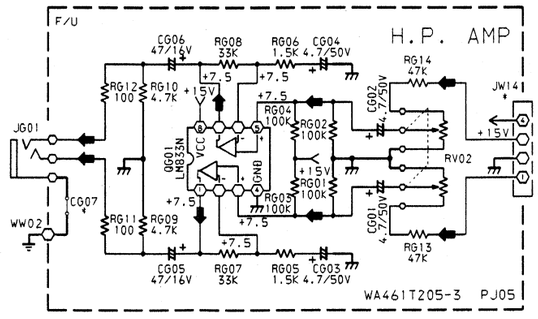


4. SCHEMATIC DIAGRAM AND PARTS LOCATION (pattern side)

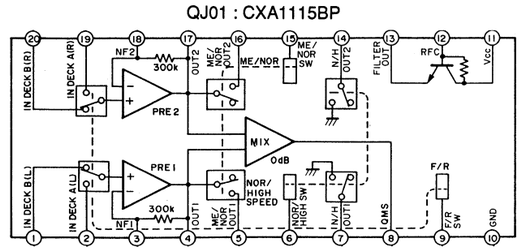


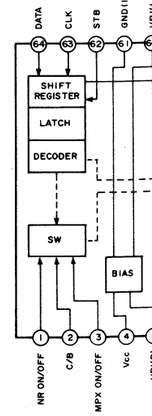


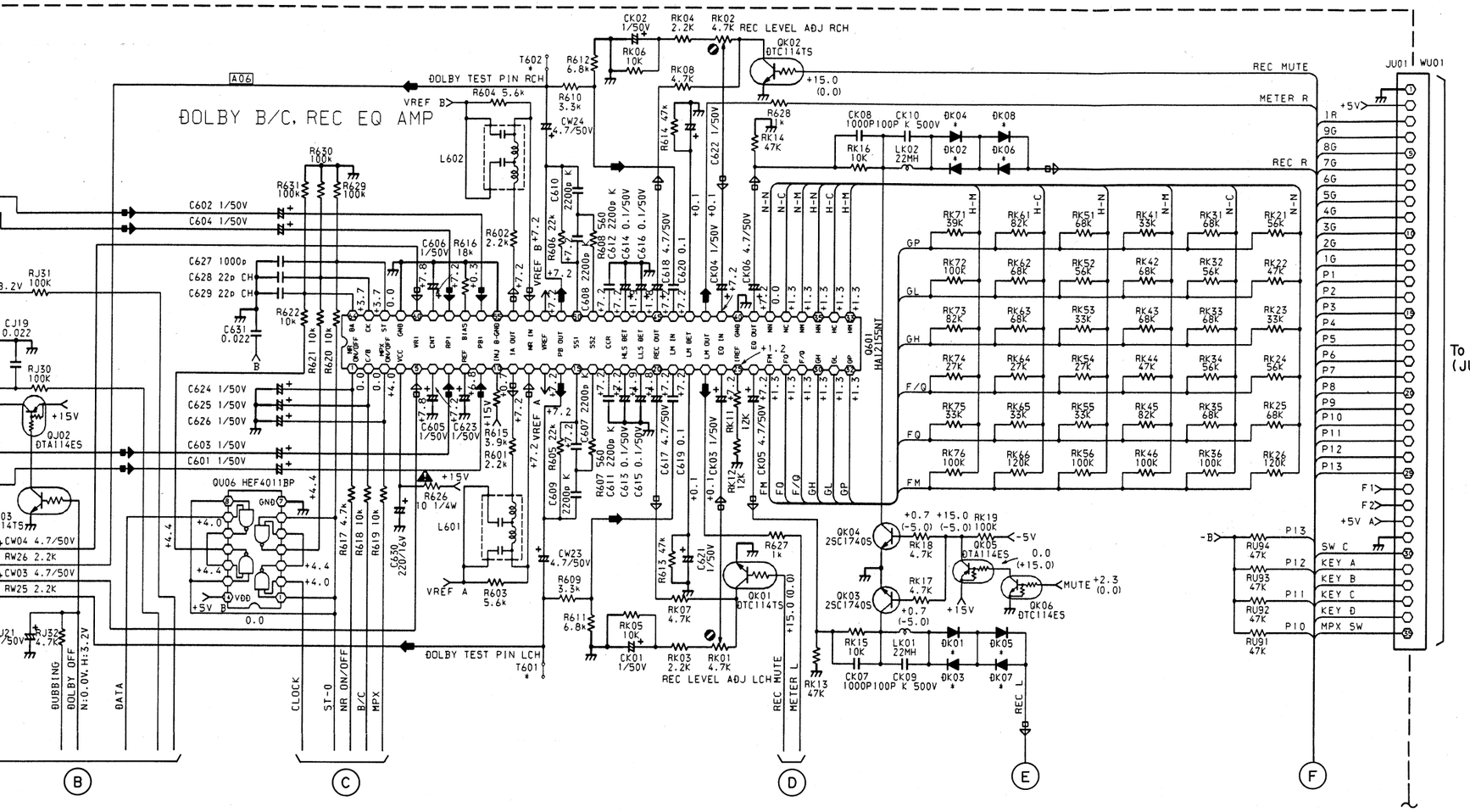
〔01/02/05/07〕

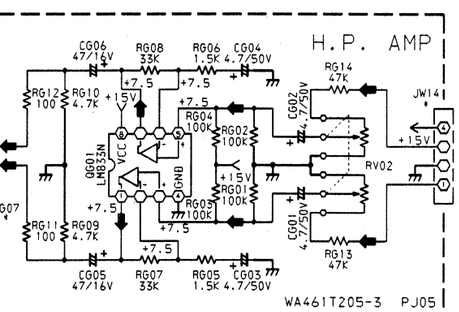


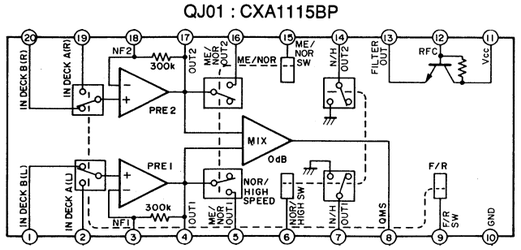
〔U/F〕

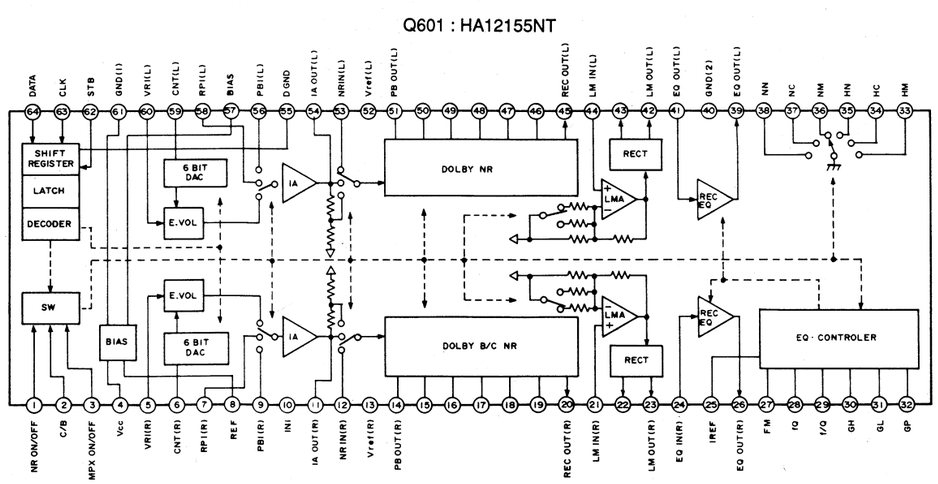





DOLBY B/C, REC EQ AMP
DOLBY TEST PIN RCH
DOLBY TEST PIN LCH
REC LEVEL ADJ RCH
REC LEVEL ADJ LCH
REC MUTE
METER R
REC R
REC L
METER L
MUTE
To PU03 (JU11)
QW51
PJ04
PJ04 WA461T204-3
〔/01/02/05/07〕
QG01
PJ05
PJ05 WA461T205-3
〔U/F〕
DATA
CLOCK
ST-0
NR ON/OFF
B/C
MPX
DUBBING
DOLBY OFF
N:0.0V, H:3.2V
A06
B
C
D
E
F

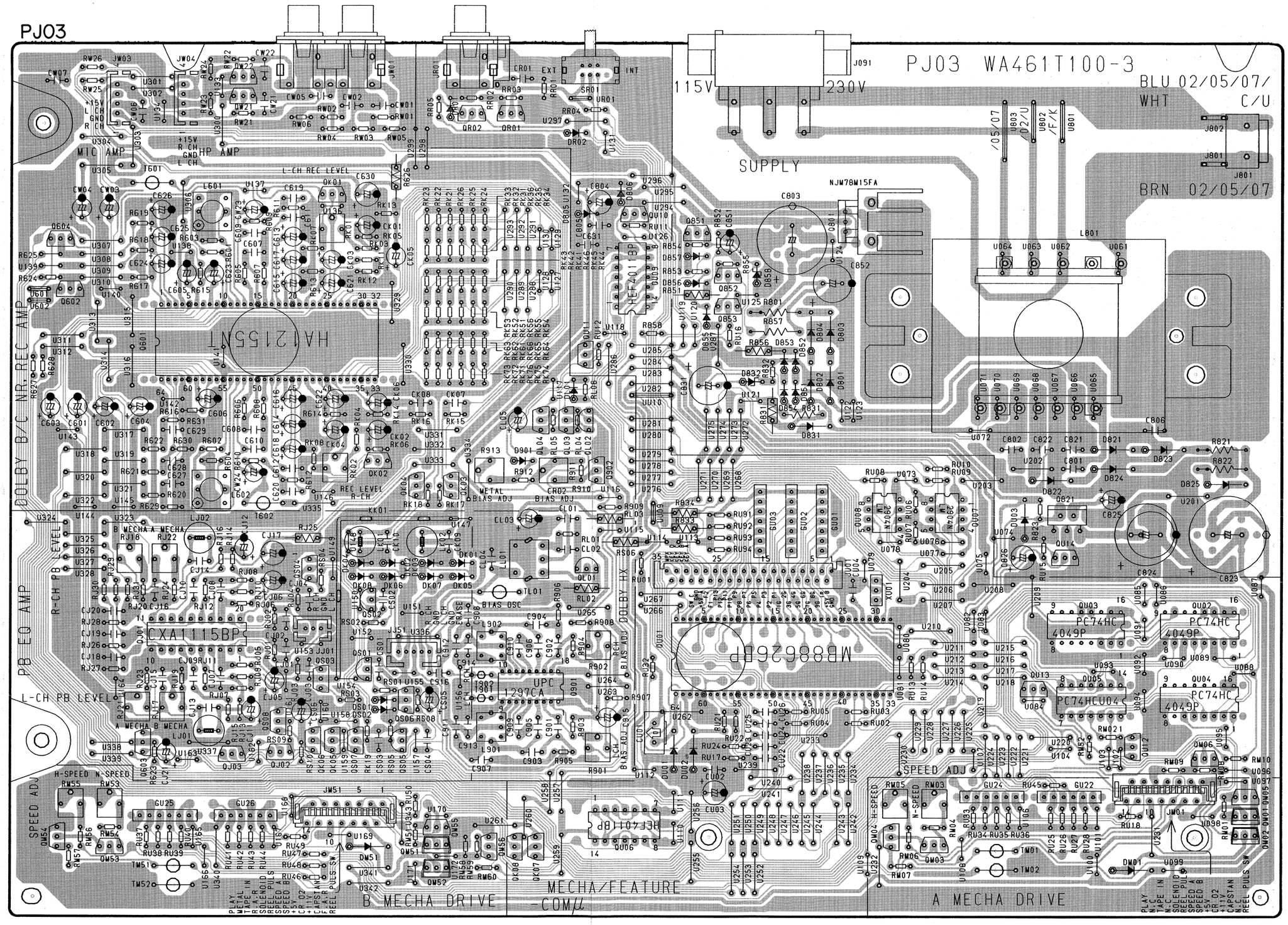

H.P. AMP
WA461T205-3 PJ05
〔U/F〕


QJ01 : CXA1115BP
PRE1
PRE2
MIX
0dB
NOR/HIGH SPEED
300k


Q601 : HA12155NT
SHIFT REGISTER
LATCH
DECODER
SW
BIAS
6 BIT DAC
E.VOL
IA
DOLBY NR
DOLBY B/C NR
RECT
LMA
REC EQ
EQ CONTROLER

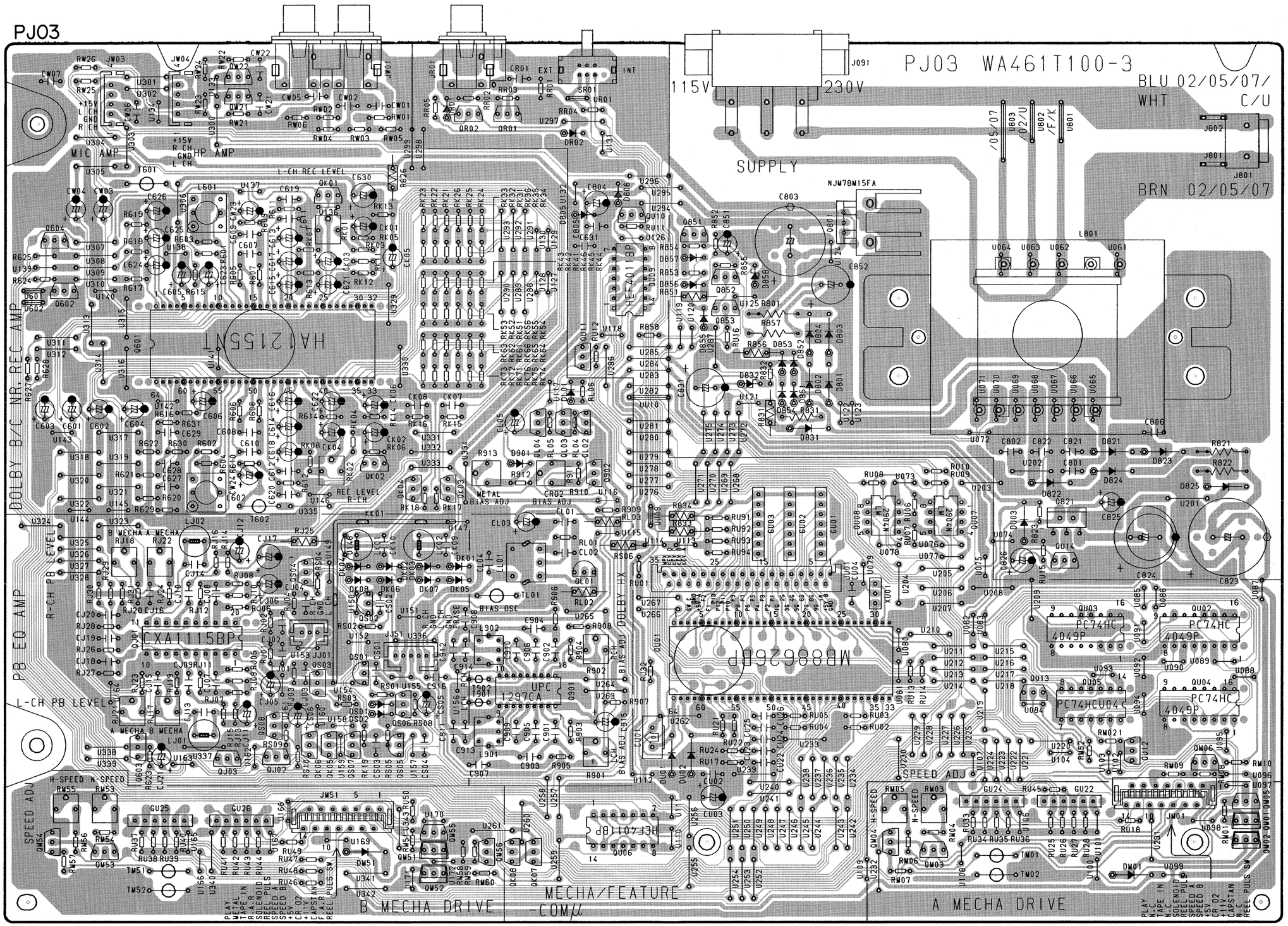
Q604 Q602 Q601 QW22 QK01 QK02 QK04 QK03 QR02 QR01 Q902 QU11 QU10 Q851 ~ Q853 Q801 QM05
QJ01 QW21 QS08 QS04 QS03 QS01 QS02 QS06 Q901 QL04 QL03 QL02 QL01 QU09 QU01 QU08 QU07 Q821 QU02 ~ QU05 QM01
QM54 QM53 Q603 QJ03 QJ02 QK06 QK05 QS07 QS05 QM51 QM52 QM55 QM56 QK08 QK07 QU06 QM04 QM03 QU13 QU14 QU12 QM06 QM02

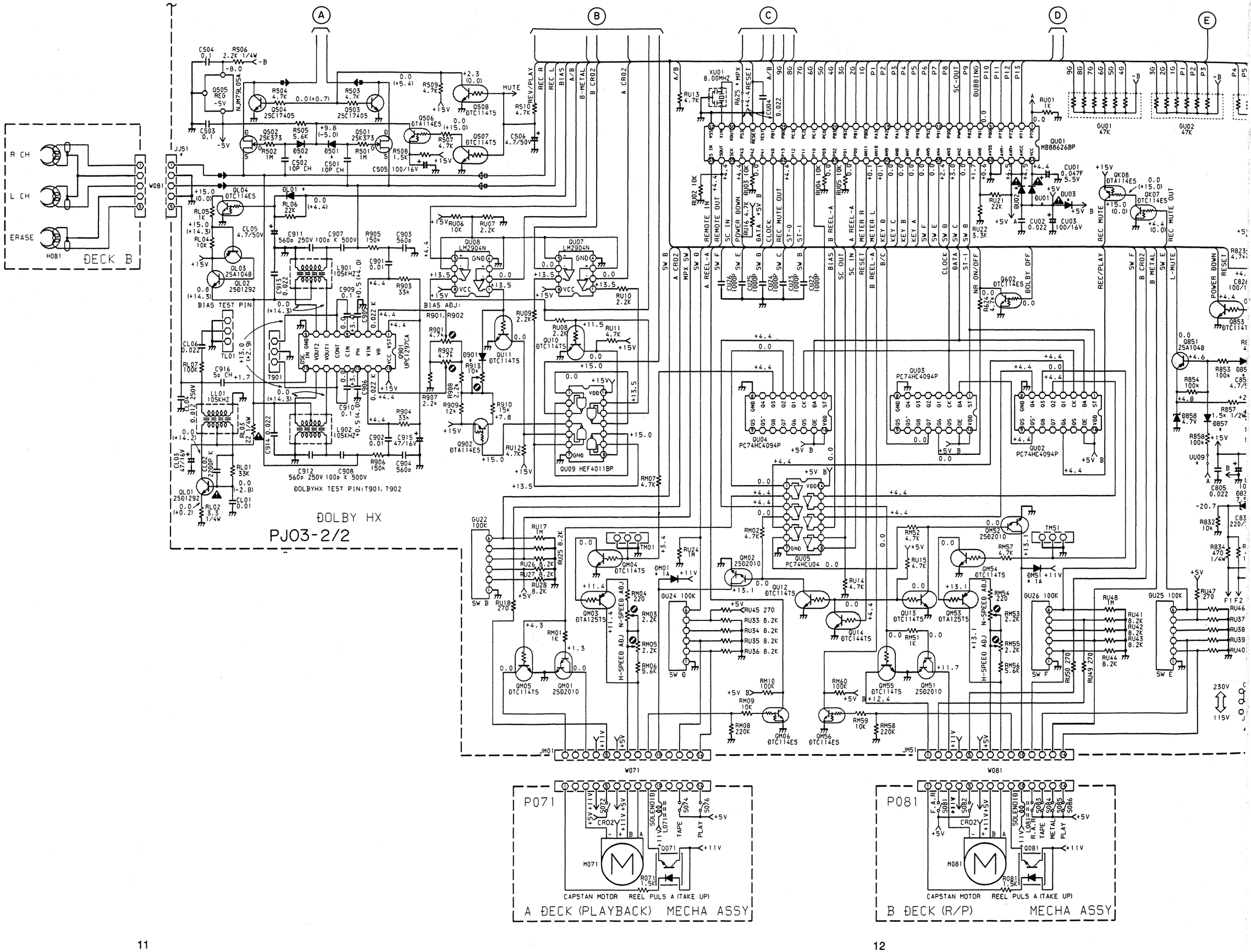
PJ03

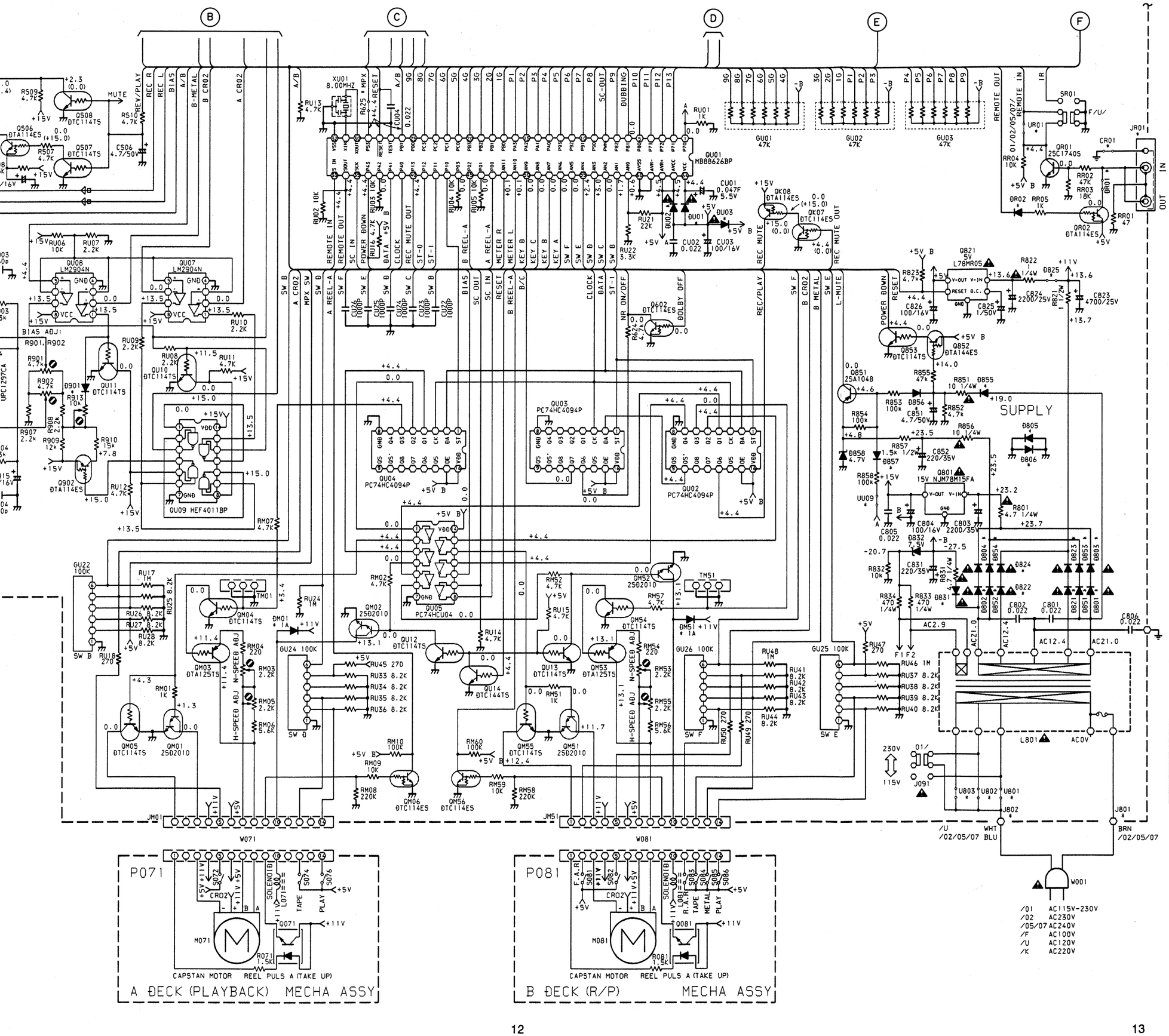


Q604 Q602 Q601 QW22 QK01 QK02 QK04 QK03 QR02 QR01 Q902 QU11 QU10 Q851 ~ Q853 Q801 QM05
QJ01 QW21 QS08 QS04 QS03 QS01 QS02 QS06 Q901 QL04 QL03 QL02 QL01 QU09 QU01 QU08 QU07 Q821 QU02 ~ QU05 QM01
QM54 QM53 Q603 QJ03 QJ02 QK06 QK05 QS07 QS05 QM51 QM52 QM55 QM56 QK08 QK07 QU06 QM04 QM03 QU13 QU14 QU12 QM06 QM02

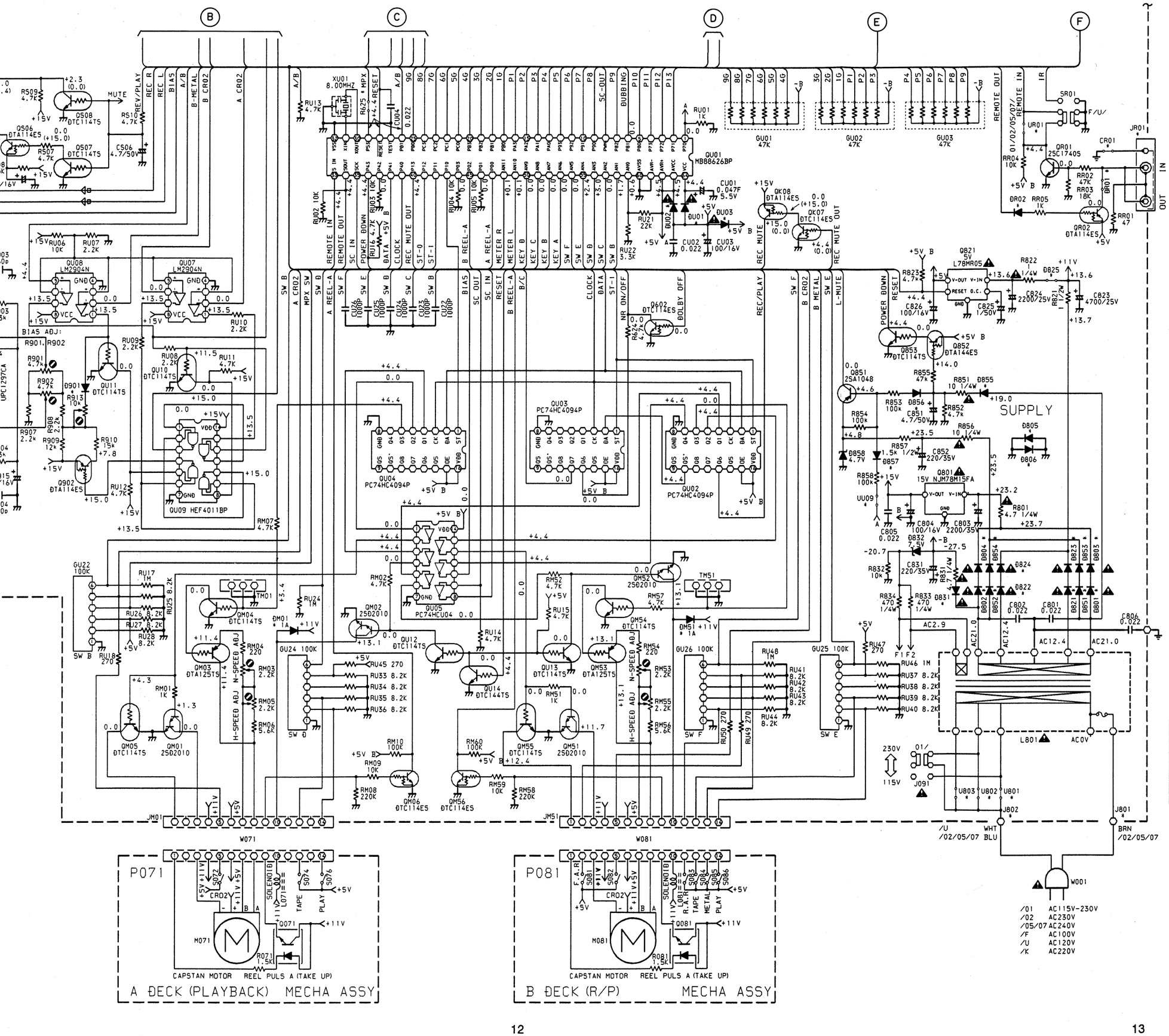
PJ03




R CH
L CH
ERASE
H081
ĐECK B
W081
JJ51
A
B
C
D
E
ĐOLBYHX TEST PIN:T901, T902
ĐOLBY HX
PJ03-2/2
XU01 8.00MHZ
QU01 MB88626BP
QU02 PC74HC4094P
QU03 PC74HC4094P
QU04 PC74HC4094P
QU05 PC74HCU04
QU08 LM2904N
QU09 HEF4011BP
QU07 LM2904N
REMOTE IN
REMOTE OUT
SC IN
POWER DOWN
DATA
CLOCK
REC MUTE OUT
ST-0
ST-1
A REEL-A
METER R
METER L
KEY B
KEY C
KEY B
KEY A
SW F
SW E
SW D
SW C
SW B
SC-OUT
DUBBING
REC MUTE
REC/PLAY
NR ON/OFF
DOLBY OFF
L-MUTE
POWER DOWN
RESET
BIAS ADJ:
R901, R902
JM01
JM51
W071
W081
P071
P081
A ĐECK (PLAYBACK) MECHA ASSY
B ĐECK (R/P) MECHA ASSY
CAPSTAN MOTOR
REEL PULS A (TAKE UP)
230V
115V



	TS15426010	TS15426020	TS15426030
J091	—	—	01/
U801	F	K	—
U802	U	/02	—
U803	—	/05/07	—



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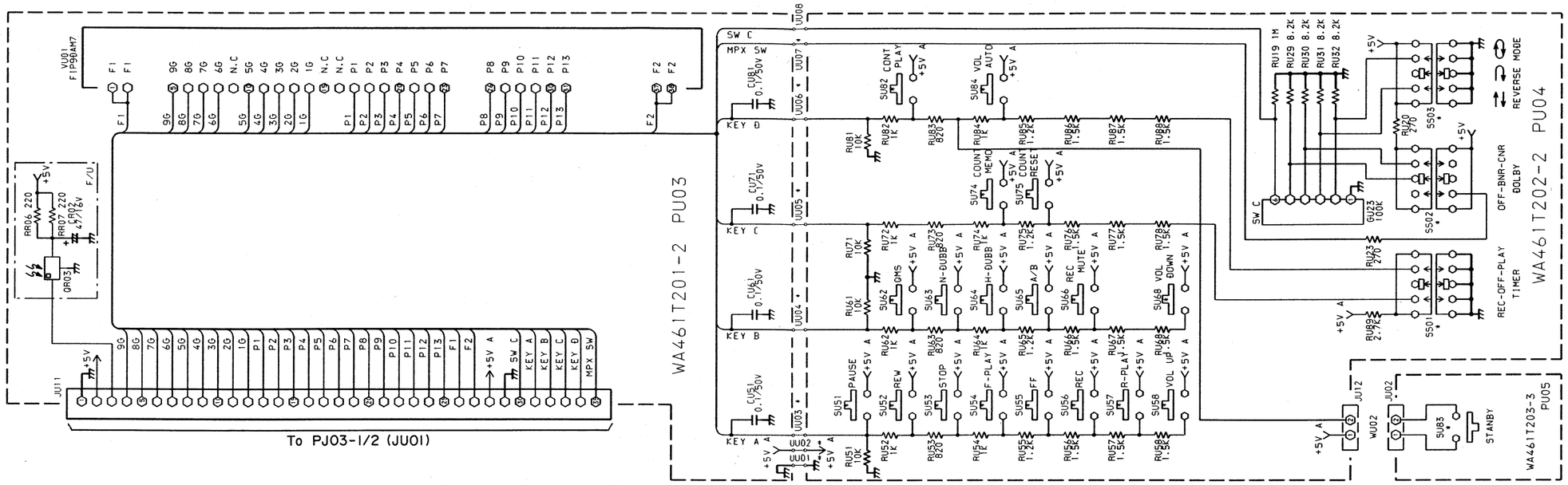
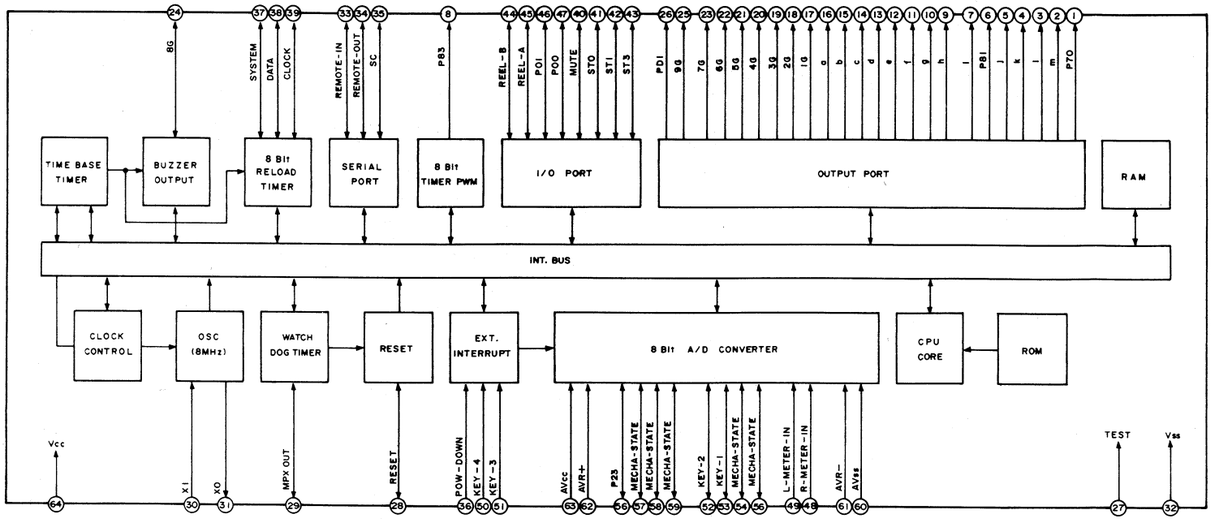
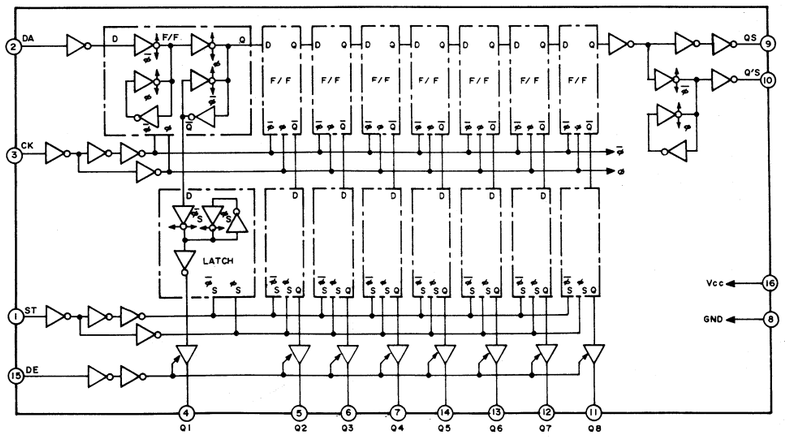
J091	—	—	01/
U801	F	K	—
U802	U	/02	—
U803	—	/05/07	—



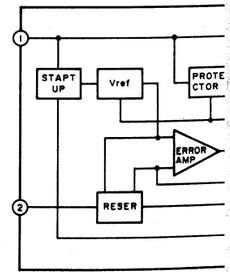
QU01 : MB88626BP

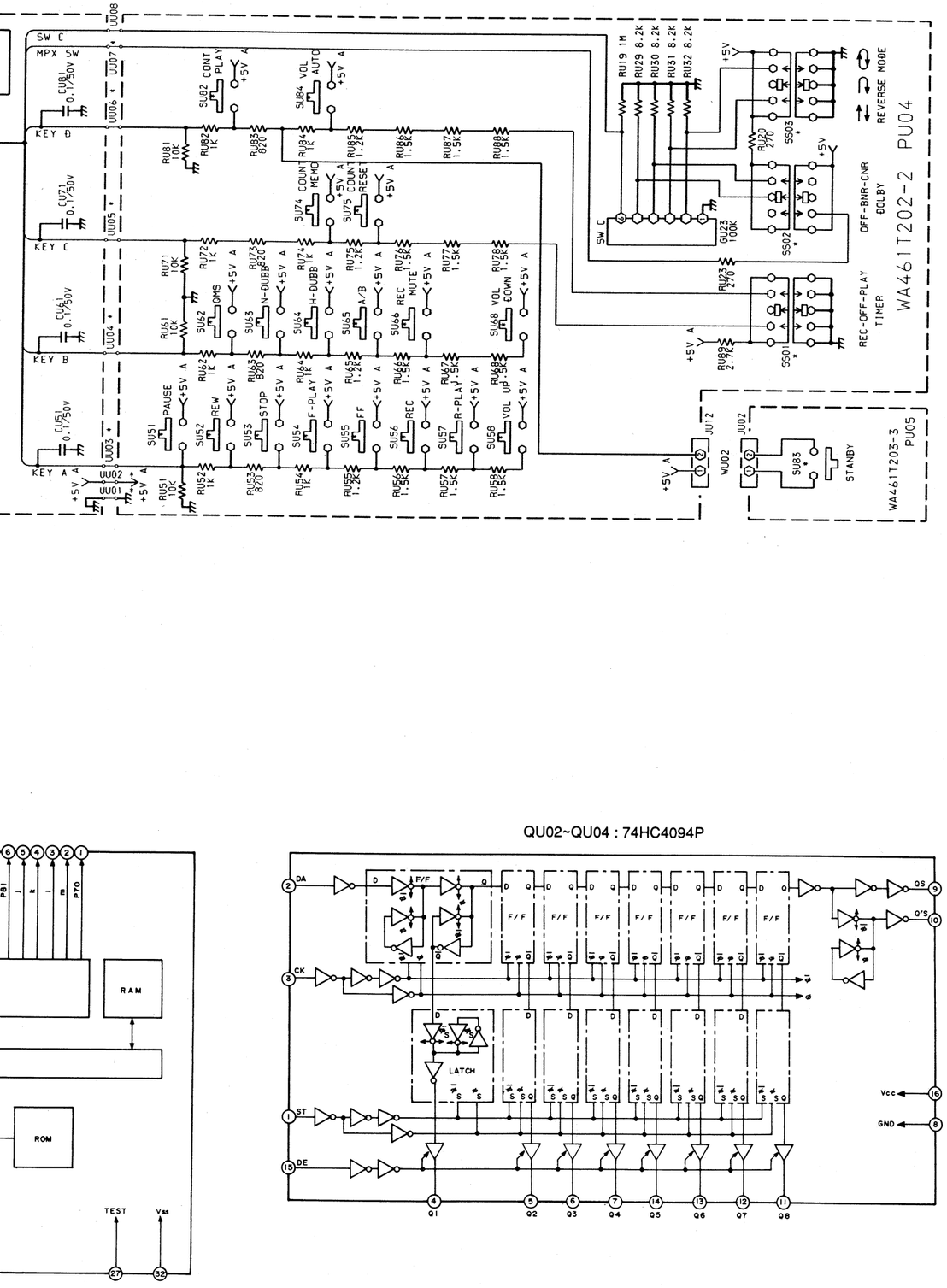


QU02~QU04 : 74HC4094P

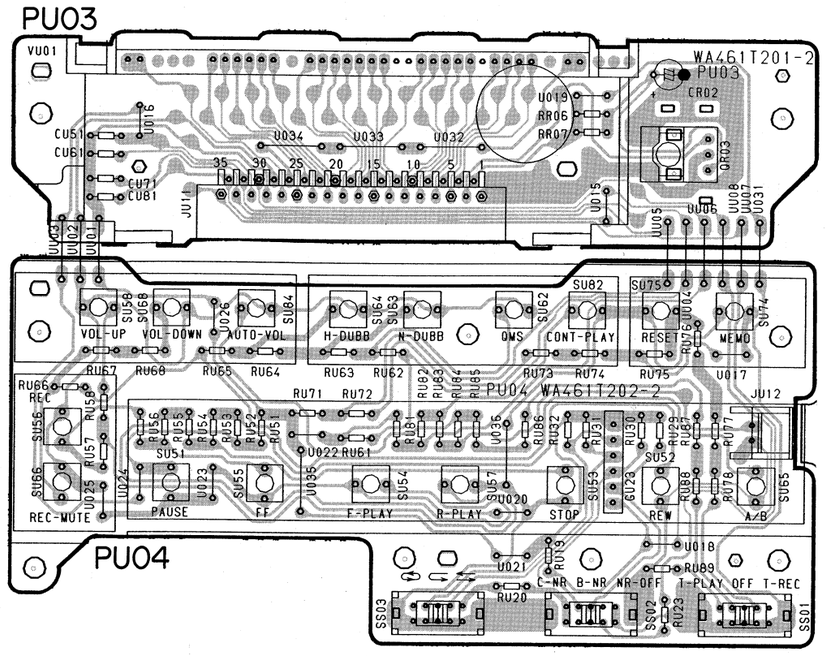


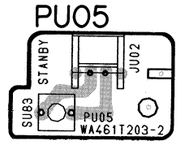
Q821 : L78MR





QU02~QU04 : 74HC4094P





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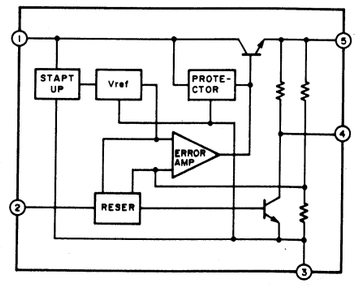
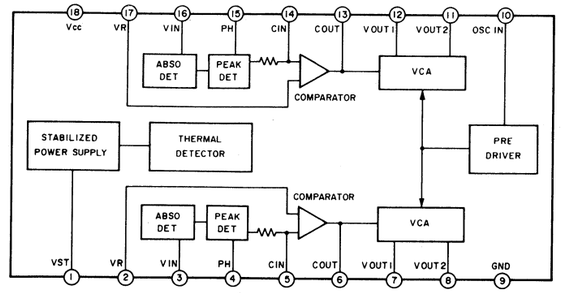
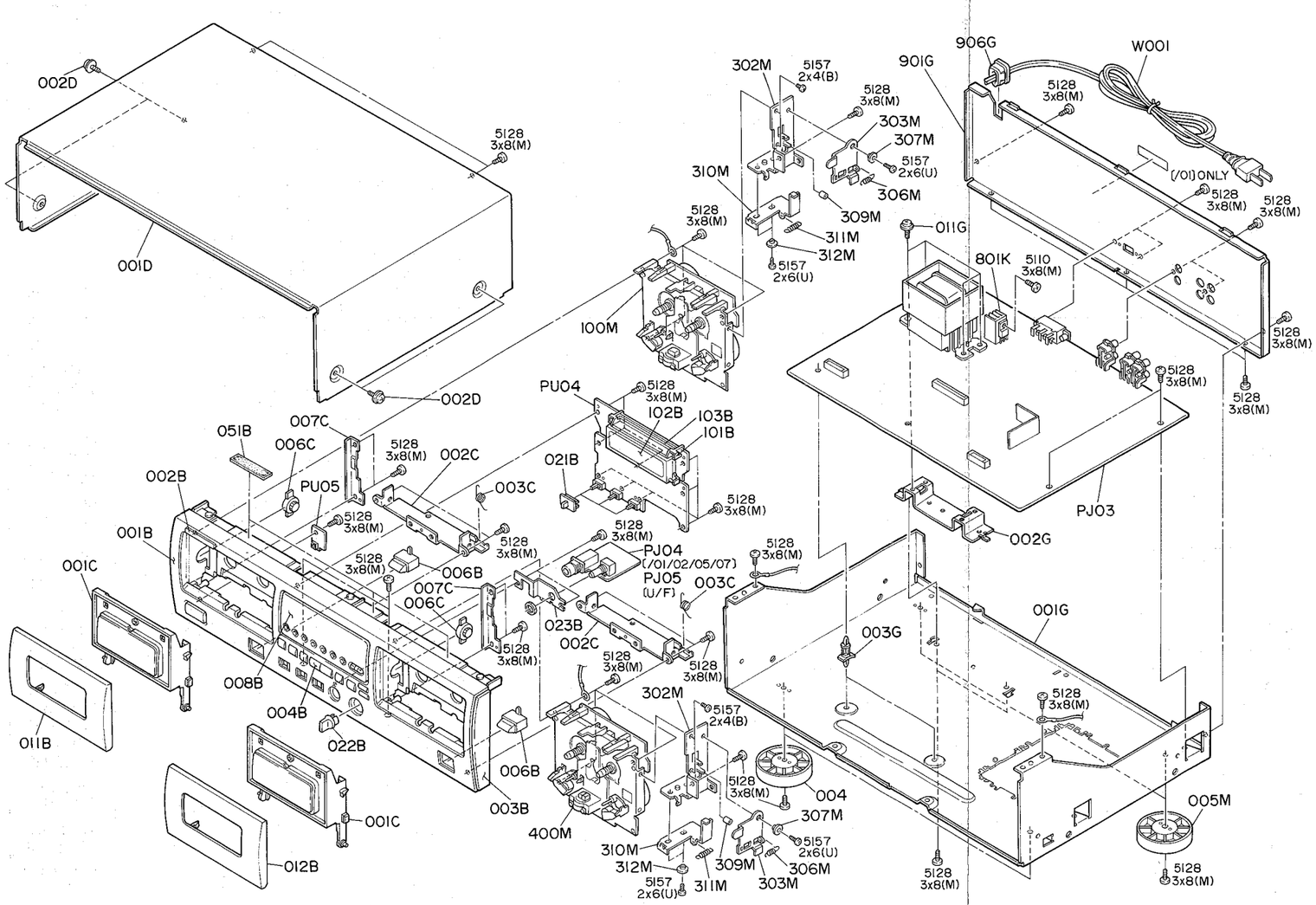


Q901 : µPC1297CA

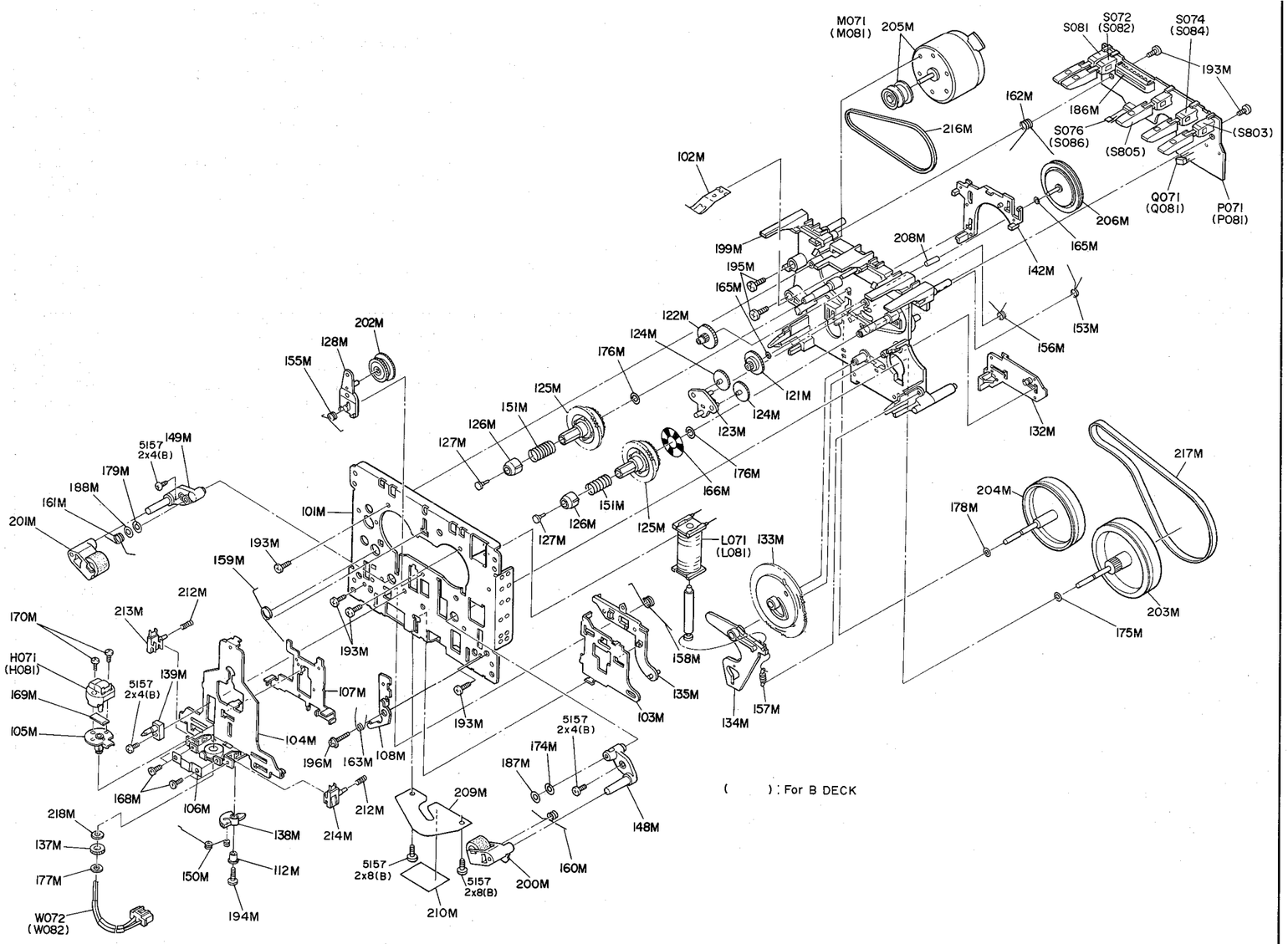


5. EXPLODED VIEW AND PARTS LIST



(U : U.S.A., K : FAR EAST, F : JAPAN, EUROPE : /XXX)

POS.NO	VERSION OR COLOR	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO. (FOR U, F)
			BLACK VERSION	
001B	/01B /02B /05B /07B	4822 443 41488	FRONT PANEL (BLK)	461T248010
	U/F		FRONT PANEL (BLK)	461T248020
003B	/01B /02B /05B /07B	4822 464 51061	CHASSIS, FRONT (BLK)	461T105010
	U/F		CHASSIS, FRONT (BLK)	461T105010
004B		4822 410 63501	BUTTON, MECHA (BLK)	461T270010
006B		4822 410 63502	BUTTON, EJECT (BLK)	461T270030
008B		4822 450 62339	WINDOW, FL	461T158020
011B		4822 443 64295	COVER, CASSETTE A (BLK)	461T053010
012B		4822 443 64296	COVER, CASSETTE B (BLK)	461T053020
021B		4822 411 61991	KNOB, SLIDE (BLK)	461T154010
022B		4822 410 60873	KNOB (BLK)	426T154010
			GOLD VERSION	
001B	/01G /02G	4822 443 41499	FRONT PANEL (GLD)	461T248110
	F		FRONT PANEL (GLD)	461T248120
003B	/01G /02G /F	4822 464 51064	CHASSIS, FRONT (GLD)	461T105110
004B	/01G /02G /F	4822 410 63541	BUTTON, MECHA (GLD)	461T270110
006B	/01G /02G /F	4822 410 63542	BUTTON, EJECT (GLD)	461T270130
008B		4822 450 62339	WINDOW, FL	461T158020
011B	/01G /02G /F	4822 443 64312	COVER, CASSETTE A (GLD)	461T053110
012B	/01G /02G /F	4822 443 64313	COVER, CASSETTE B (GLD)	461T053120
021B	/01G /02G /F	4822 411 61994	KNOB, SLIDE (GLD)	461T154110
022B	/01G /02G /F	4822 410 63519	KNOB (GLD)	426T154210
			COMMON	
001C		4822 256 92253	HOLDER, CASSETTE	461T271010
006C			DAMPER, GEAR	391H130020
002D		4822 502 12511	B.T.SCREW (W/W) M3 x 8	51260308M0
004G		4822 462 42045	LEG, FRONT	183J057010
005G		4822 462 42048	LEG, REAR	183J057110
011G		4822 502 12511	B.T.SCREW (W/W) M3 x 8	51260308M0
906G	/01	4822 532 61184	BUSHING, AC CORD	
	/02 /05 /07	4822 532 60948	BUSHING, AC CORD	
	U/F		BUSHING, AC CORD	450H259010
⚠ J011	/01	4822 265 10092	JACK, AC ADAPTOR	
001T	/01 /02 /05 /07	4822 736 22225	USER MANUAL	461T851310
	U		USER MANUAL	461T851250
	F		USER MANUAL	461T851110



( ) : For B DECK

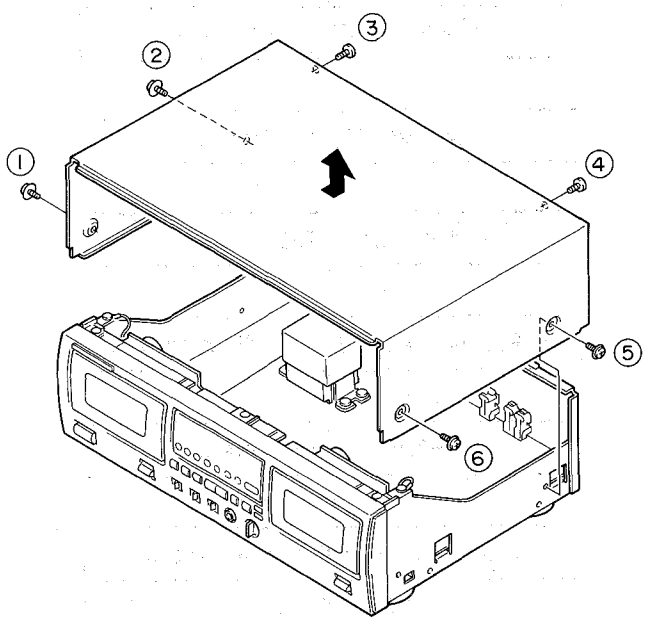
(U : U.S.A., K : FAR EAST, F : JAPAN, EUROPE : /XXX)

POS.NO	VERSION OR COLOR	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO. (FOR U, F)
104M		4822 464 51062	HEAD CHASSIS ASSY	461T105210
105M		4822 462 10524	HEAD PLATE ASSY	435T128110
106M		4822 492 71166	LEAF SPRING, AZIMUTH	435T116120
121M		4822 522 33278	GEAR, CLUTCH	435T058110
122M		4822 522 33279	GEAR, REW	435T058120
124M		4822 522 33281	GEAR, FR	435T058130
125M		4822 522 33282	GEAR, REEL	435T058140
126M		4822 462 71856	CAP. REEL (A)	435T067110
127M		4822 532 21462	BUSHING, REEL (B)	435T259110
133M		4822 522 33283	GEAR, PLAY CAM	435T058160
137M		4822 522 33284	GEAR, ROTATION	435T058170
138M		4822 522 33285	GEAR, RETURN	435T058180
139M		4822 403 70688	GUIDE, CASSETTE	435T051120
142M		4822 403 10304	ARM, BRAKE	435T002170
150M		4822 492 71149	SPRING, RETURN	435T115110
151M		4822 492 71151	SPRING, REEL	435T115120
153M		4822 492 71153	SPRING, CLUTCH ARM	435T115140
155M		4822 492 71155	SPRING, PLAY ARM	435T115160
156M		4822 492 71156	SPRING, SHIFT LEVER	435T115170
157M		4822 492 71157	SPRING, TRIGGER ARM	435T115180
158M		4822 492 71158	SPRING, SHIFT	435T115190
159M		4822 492 71159	SPRING, HEAD CHASSIS	435T115200
160M		4822 492 71161	SPRING, P ROLLER (R)	435T115210
161M		4822 492 71162	SPRING, P ROLLER (L)	435T115220
162M		4822 492 71163	SPRING, BRAKE ARM	435T115230
163M		4822 492 71164	SPRING, INTER LOCK (R)	435T115240
165M		4822 532 52473	WASHER, POLYSLIDER	435T012110
166M		4822 466 62425	SEAL, REFLECT	446T108110
169M		4822 401 11508	CLAMPER, HEAD WIRE	435T005110
170M		4822 502 21223	SCREW, HEAD (RVS)	435T010120
174M		4822 532 52474	WASHER, POLYSLIDER	435T012120
175M		4822 532 52475	WASHER, POLYSLIDER	435T012130
176M		4822 532 52471	WASHER, TEFRON	427T012110
177M		4822 532 52476	WASHER, POLYSLIDER	435T012140
178M		4822 532 52472	WASHER, POLYSLIDER	427T012120
179M		4822 532 52477	WASHER, POLYSLIDER	435T012150
199M		4822 464 50919	CHASSIS, MECHA BASE ASSY	435T105500
200M		4822 403 70686	ARM, PINCH ROLLER (R) ASSY	435T002500
201M		4822 403 70687	ARM, PINCH ROLLER (L) ASSY	435T002510
202M		4822 522 33286	PLAY GEAR ASSY	435T058500
203M		4822 528 60427	FLYWHEEL (R) ASSY	461T273500
204M		4822 528 60428	FLYWHEEL (L) ASSY	461T273510
206M		4822 528 20754	CLUTCH ASSY	435T061500
216M		4822 358 31199	BELT, DRIVE (B)	435T264110
217M		4822 358 31201	BELT, DRIVE (C)	435T264120
H071		4822 249 30216	PLAYBACK HEAD	*LH200070R
H081		4822 249 10507	REC / P.B. ERASER HEAD	*LH500040R
L071		4822 281 50185	SOLENOID COIL ASSY	*ME100110R
L081		4822 281 50185	SOLENOID COIL ASSY	*ME100110R
M071		4822 361 21429	D.C. MOTOR ASSY	*MM000710R
M081		4822 361 21429	D.C. MOTOR ASSY	*MM000710R
Q071		4822 130 82364	PHOTO UNIT	*HW100020R
Q081		4822 130 82364	PHOTO UNIT	*HW100020R
S072		4822 271 30779	MINI SW	*SM000310R
S074		4822 271 30779	MINI SW	*SM000310R
S076		4822 271 30781	MINI SW	*SM000250R
S081 ~ S085		4822 271 30779	MINI SW	*SM000310R
S086		4822 271 30781	MINI SW	*SM000250R
W072			CONNECTIVE CORD, 3P	*YB001600R
W082		4822 321 62192	CONNECTIVE CORD, 5P	*YB001590R

6. DISASSEMBLY

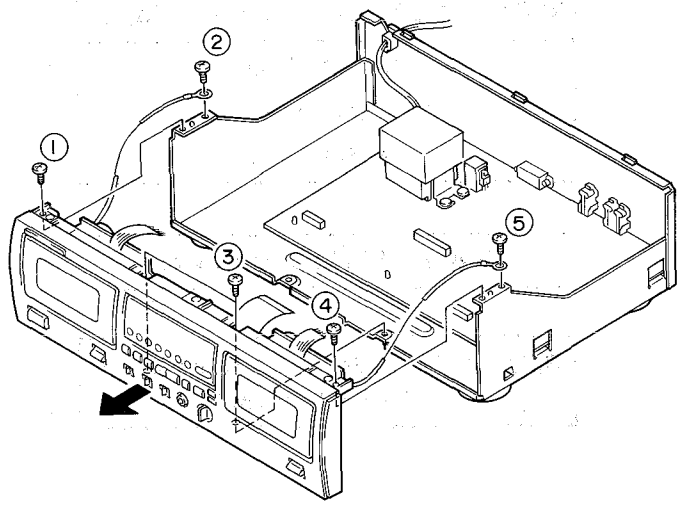
6.1 REMOVING THE TOP COVER AND SIDE PANEL

Remove the screws ① ~ ⑥ .



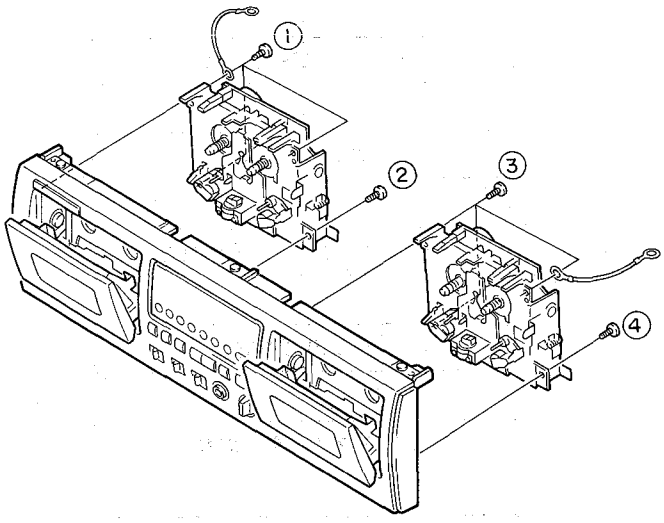
6.2 REMOVING THE FRONT PANEL

Remove the screws ① ~ ⑤ .



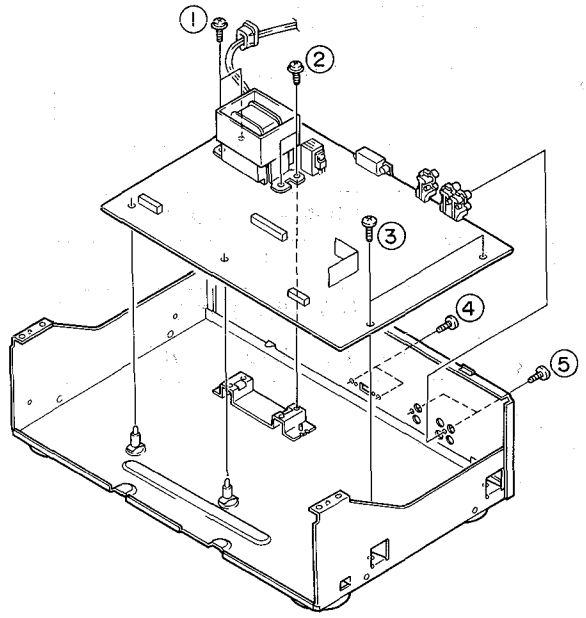
6.3 REMOVING THE MECHANISM

Remove the screws ① ~ ④ .

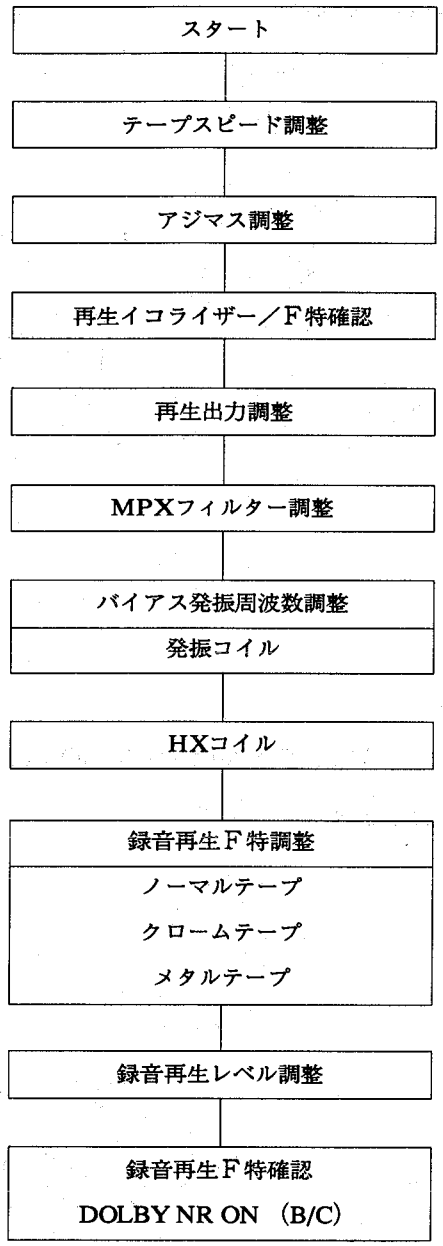


6.4 REMOVING THE MAIN P.W. BOARD

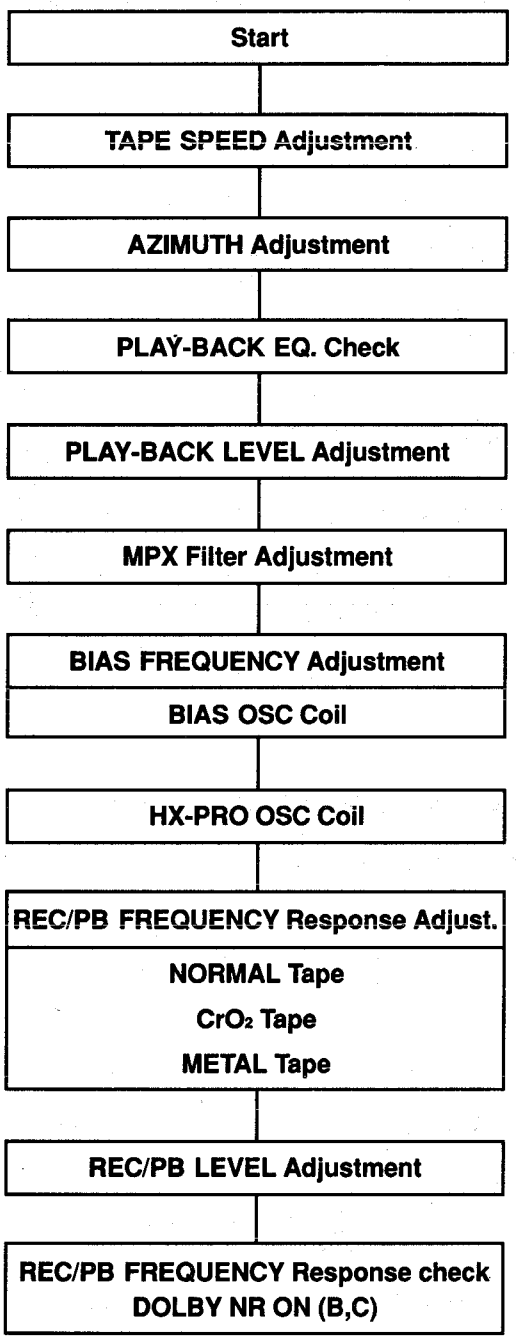
Remove the screws ① ~ ⑤ .



調整フローチャート



ADJUSTMENT FLOW CHART



◇サービス時に必要な試験機材

●このModelを測定又はチェックするのに次のものが必要です。

○オーディオ発振器　(AF OSC)
○アッテネータ　　(600Ω)
○VTVM
○歪率計
○オシロスコープ
○ワウ、フラッターメーター
○トルクメーター　(カセット型)
○デジタル周波数カウンター
○ブランクテープ
(バルクイレーサーで完全に消去したもの)
AC-224 (Normal)　AC-712 (Metal)
AC-513 (CrO_2)

注意：
もし測定値が疑わしい場合は新しいテープを使用してください。

○テストテープ
TCC-112・MTT-111 ..... ワウ・フラッタ
テープスピード
TCC-140・MTT-112B .... S/N比
TCC-130・MTT-150 ..... 出力レベル測定
TCC-161・MTT-256 ..... 周波数特性測定 (Normal用)
TCC-261・MTT-356 ..... 周波数特性測定 (CrO_2/Metal用)
TCC-192・MTT-121 ..... クロストーク
TCC-194・MTT-141 ..... チャンネルセパレーション
TCC-174A・MTT-255M アジマス調整
(A-BEX)・(TEAC)

○ヘッドおよびガイドゲージ(M-300)
THG-801 ..... ヘッド、ガイド調整

◇回路の調整と測定

●調整上の注意点

1) テキストテープは減衰しやすいので、使用する前にヘッド、キャプスタン等をイレーサーにて充分に消磁してください。
2) テストテープはトランス内蔵の計測器やイレーサーのすぐ近くには置かないでください。
3) 消磁の方法として、セットからやや離れた所でイレーサーのスイッチを入れヘッド、キャプスタンに近づけ上下に4～5回動かし、ゆっくり離し遠ざけてからスイッチを切ってください。
4) 使用する工具は帯磁していないこと、時々バルクイレーサーで消磁してください。
5) 調整用半固定抵抗及び可変コイル等は、極力最小の回転／回数で調整してください。
6) スピード、ワウ等は、セットの通常の姿勢で調整／チェックしてください。
7) ボンドロックは少量にし、周辺に付着あるいは流れ出ることなど無いよう注意してください。
8) AC電源電圧、オーディオ発信器出力電圧等は、1日2～3回規定どうりかチェックしてください。

7. TEST EQUIPMENT REQUIRED FOR SERVICING

For measuring or checking your Cassette Deck, the following instruments and materials are necessary.

- Audio Oscillator (AF OSC)
- Attenuator (600 Ω)
- VTVM
- Distortion Meter
- Oscilloscope
- Wow and Flutter Meter
- Torque Meter (Cassette Type)
- Digital Frequency Counter
- Blank Tapes (Completely erased with bulk eraser)
  AC-224 (Normal)
  AC-513 (CrO_2)
  AC-712 (Metal)

NOTE:
If any doubt is noted in a measured value, use new tape.

- Test Tape

TCC-112•MTT-111	Wow and Flutter, Tape Speed
TCC-140•MTT-112B	Signal-to-Noise Ratio
TCC-130•MTT-150	Level Adjustment
TCC-161•MTT-256	Frequency Response (for Normal)
TCC-261•MTT-356	Frequency Response (for CrO_2 and Metal)
TCC-192•MTT-121	Cross Talk
TCC-194•MTT-141	Channel Separation
TCC-174A•MTT-255M (A-BEX)•(TEAC)	Azimuth adjustment

- Mirror cassette 12 μm padless
  TCC-902•MTT-902　Tape travel check
- Head and guide gauge (M-300)
  THG-801

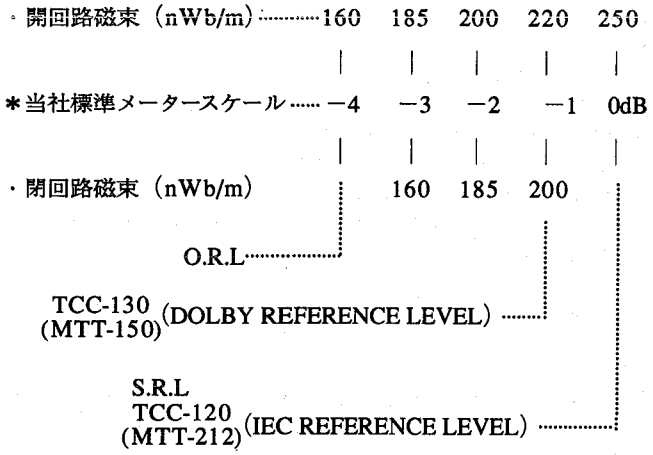
8. ELECTRICAL ADJUSTMENTS

(A) Remark for adjustment

1) Test tapes damp easily. Erase magnetism of heads and capstans, etc. completely with head erasers before using them.
2) Keep away from measuring instruments have transformer inside and tape eraser.
3) The method of magnetism erase: turn the head eraser on a little away from the sets. Then, close heads and capstans and move up and down 4 – 5 times. Turn them off after making distance slowly.
4) Tools you are going to use should not be magnetized. Erase magnetic them by bulk eraser sometimes.
5) Adjust semi-fixed resistor for adjustment and variable coil, etc. spin and the number of times as less as possible.
6) Adjust and check SPEED and WOW, etc. by normal sets condition.
7) A little bond lock and pay attention to sticking around and flowing.
8) Check AC voltage input and audio oscillator output voltage 2 – 3 times per day to operate as normal.

基準録音レベル（S.R.L）

1．テープ上に開回路磁束で、250nWb/mの磁束を記録出来るレベルのことであり、記録レベルとメータースケール及びテストテープの関係は以下のとうりです。


・開回路磁束（nWb/m）……160 185 200 220 250
＊当社標準メータースケール…… −4 −3 −2 −1 0dB
・閉回路磁束（nWb/m） 160 185 200
O.R.L
TCC-130 (MTT-150) (DOLBY REFERENCE LEVEL)
S.R.L TCC-120 (MTT-212) (IEC REFERENCE LEVEL)

注意：

（1）開回路磁束＝閉回路磁束＋漏洩磁束

（2）当セットのFLは、−5、0、+3の表示です。

2．セットでは通常ドルビーレベルを基準としているので、以下のようになります。

1）LINE入力に1KHz、100mVの信号を加え録音状態とします。

2）LINEの入力を調整し、ドルビーポイント（L）T601、（R）T602でのレベルが580mVとなるようにします。

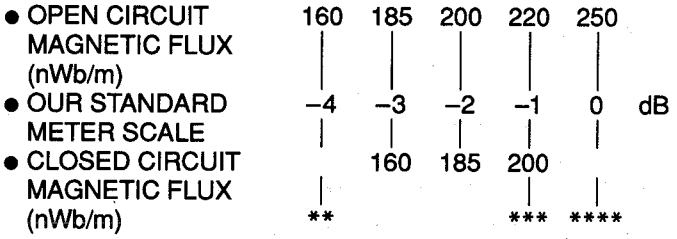
3）この状態から入力レベルを−3dBとした（アッテネーで3dB下げる）状態がすなわち、動作録音レベル（O.R.L）での録音状態です。

注意：

再生の基準レベルはその測定項目により異なり、使用指定のテストテープの記録レベルが基準レベルを決定することになります。

(B) S.R.L/Standard Recording Level

1. S.R.L (Standard Recording Level) which is 250 nWb/m on a tape by* OPEN CIRCUIT MAGNETIC FLUX. The relationship among recording level, meter scale and test tape are as follows:


● OPEN CIRCUIT MAGNETIC FLUX (nWb/m) 160 185 200 220 250
● OUR STANDARD METER SCALE −4 −3 −2 −1 0 dB
● CLOSED CIRCUIT MAGNETIC FLUX (nWb/m) 160 185 200
** *** ****

(*): OPEN CIRCUIT MAGNETIC FLUX = CLOSED CIRCUIT MAGNETIC FLUX + LEAK MAGNETIC FLUX.

(**): O.R.L

(***): TCC-130 (DOLBY REFERENCE LEVEL) (MTT-150)

(****): S.R.L TCC-120 (IEC REFERENCE LEVEL) (MTT-212)

(Note) The FL of this set indicates only −5, 0 and +3.

2. S.R.L Setting As for sets, DOLBY LEVEL is usually standard, it will be as follows:

1) Recording condition is to add 1 kHz, 100 mV signals on LINE INPUT.

2) Adjust LINE INPUT and should be 580 mV at DOLBY test points L/T601, R/T602.

3) From this condition, input level is −4 db (4 dB down by attenuator). It is the recording condition at OPERATION RECORDING LEVEL. (O.R.L)

(Note) Depending on measurement items, playing standard level changes a lot. Recording level of specified test tape decides the standard level.

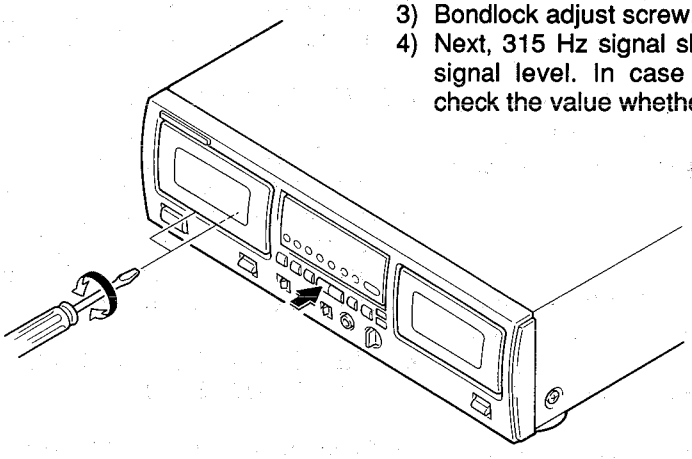
●テープスピード調整

1）PLAYボタンを押しテストテープの中間を再生します。
基板PJ03上のテストポイントJM01とJM02をショートしハイスピードモードにします。（Aデッキ）（Bデッキの場合はJM51とJM52をショートします。）RM05（Aデッキ）／RM55（Bデッキ）を調整し6000Hz（5980～6020Hz）に合わせます。
2）ショートを解除しノーマルスピードにします。RM03（Aデッキ）／RM53（Bデッキ）を調整し3000Hz（2990～3010Hz）に合わせます。
3）設定後、再度再生して範囲内のことを確認します。

注意：
1．据置きの姿勢で調整してください。
2．メカニズムが常温と大きく異なる温度状態では、調整しないでください。

●ヘッドアジマス調整／再生Ｆ特調整

1）Ｆ特テープを再生し、12.5KHzの信号でアジマス調整ビスを回し、締め付け方向で出力最大点に合わせます。
2）L/Rピーク点が違う場合は、低いチャンネルを最大にし、L/Rのバランスを取ります。
3）調整ビスをボンドロックします。
4）次に、315Hzの信号を0dBとし、12.5KHzの信号のレベルを読みます。無調整タイプのセットの場合は異常な値でないことを確認します。



●再生出力調整

1）ドルビーレベルテストテープを再生し、基板PJ03上のテストポイント（L）T601、（R）T602で、調整用半固定抵抗L）（A)RJ21／(B)RJ17 R）(A)RJ22／(B)RJ18を調整し、それぞれ出力電圧を580mVに合わせてください。
2）調整後再度再生し、再確認します。

注意：
1．再生出力が変動する場合はテープ走行の不良、又はテストテープの不良が考えられるのでチェックしてください。

●MPXフィルター周波数調整

1）ドルビーレベルで録音モニター状態とし、入力信号周波数が1KHzの時のレベルを0dBとします。
2）入力信号周波数を19KHz（±10Hz以内）とし、MPXフィルタースイッチ（DOLBY NR ON）が「ON」の状態でレベルが最小となるよう、基板PJ03上のMPXコイルL）L601／R）R602を調整します。

注意：
1．通常は、−40dB以下となります。

8.1 TAPE SPEED ADJUSTMENT

1) High speed mode
Play the middle of the test tape. Short the test point JM01 and JM02 on the PCB (PJ03). (A Deck) (In case of B deck, short the test point JM51 and JM52.) Adjust the semi-fixed resistor RM05 (A deck)/RM55 (B deck) and to be 6000 Hz (5980 – 6020 Hz).
2) Normal speed mode
Restore the short connecting. Adjust the semi-fixed resistor RM03 (A deck)/RM53 (B deck) and to be 3000 Hz (2990 – 3010 Hz).
3) After the set-up, play it again and check within range.

Remarks:
1) Carry them out the set condition.
2) Do not test the mechanism when the condition has a big difference of normal temperature.

8.2 HEAD AZIMUTH ADJUSTMENT AND PLAY-BACK FREQUENCY RESPONSE ADJUSTMENT (OR CHECK)

1) Play the frequency response tape and screw the AZIMUTH adjust screw at 12.5 kHz signal. Then, set output maximum to the screwed-up direction.
2) In case L/R peak point is difference, turn the lower channel maximum, keep the L/R balance.
3) Bondlock adjust screw.
4) Next, 315 Hz signal should be 0 dB and read 12.5 kHz signal level. In case the set is non-adjustment type, check the value whether it is normal.

8.3 PLAY-BACK LEVEL ADJUSTMENT

1) Play the DOLBY test tape, adjust semi-fixed resistor for adjustment L/RJ21 (A Deck.), RJ17 (B Deck.), R/RJ22 (A Deck.), RJ18 (B Deck.) on the PCB (PJ03) at test point L/T601, R/T602 on the PCB (PJ03). Then, set output voltage to 580 mV each of them.
2) After adjustment, replay and check it again.

Remarks:
1) In case of drifting replay output, check the tape running and the test tape because it might be defective.

8.4 MPX FILTER ADJUSTMENT

1) Should be recording monitor by DOLBY LEVEL. Input signal level is 0 dB at 1 kHz.
2) Input signal frequency is 19 kHz (within ±10 Hz). Adjust MPX coil L/L601, R/L602 on the PCB (PJ03). Then MPX-F switch should be "ON" and the level is minimum.

Remarks:
1) It is under –40 dB as usual.

●録音バイアス周波数及びHXコイル共振調整

1)「METAL」ポジションで録音状態とします。
2)基板PJ03上のテストポイントTL01に10PFのコンデンサを介して測定器に接続します。(周波数カウンター及びオシロスコープ)
3)バイアス発振周波数を105KHzとなるよう基板PJ03上の発振コイルLL01を調整します。
4)次に、HXコイルL901(L)、L902(R)を調整しT901(L)、T902(R)DC電圧の最小点に合わせます。

●録音再生F特調整

1)基準録音レベルから入力レベルを更に−26dB減じ、1KHzと12.5KHzの信号をDOLBY-Cポジションで録音します。(NORMALテープ)
2)巻き戻し再生し、1KHzと12.5KHzの信号のレベル差が0〜+1.0dBとなるよう、基板PJ03上の調整用半固定抵抗R901(L)、R902(R)を調整します。
3)CrO_2、では確認のみを行ないます。
4)基準録音レベルから入力レベルを更に−26dB減じ、1KHzと12.5KHzの信号をDOLBY-Cポジションで録音します。(METALテープ)
5)巻き戻し再生し、1KHzと12.5KHzの信号のレベル差が±1.0dBとなるよう、基板PJ03上の調整用半固定抵抗R913を調整します。

●録音再生レベル調整

1)NORMALテープにて動作録音状態とし、モニターレベルを0dBとします。
2)巻き戻し再生し、1KHzのレベルが±0.5dB以内となるよう、調整用半固定抵抗RK01(L)、RK02(R)を調整します。
3)CrO_2、METALでは1KHzで±1dB以内であることの確認のみを行ないます。

●録音再生F特確認

1)基準録音レベルから入力レベルを−26dB減じ、1KHzと12.5KHzの信号をDOLBY-Bポジションで録音します。(NORMALテープ)
2)巻き戻し1KHzと12.5KHzとの信号のレベル差を確認して下さい。
3)CrO_2テープとMETALテープでも同様に確認して下さい。
4)DOLBY-Cポジションでも同様に各々確認して下さい。

注意：
DOLBY規格以内であること。

8.5 RECORDING BIAS FREQUENCY AND HX COIL ADJUSTMENT

1) Operate to REC mode at METAL position.
2) High impedance through test point TL01 on the PCB PJ03 and connect to measurement. (FREQUENCY COUNTER and OSCILLOSCOPE through AUDIO VOLT METER)
3) Adjust a bias-oscillated coil LL01 on the PCB (PJ03) to be 105 kHz bias-oscillated frequency.
4) Then, adjust HX coil L901 (L)/L902 (R) to minimum the DC VOLTAGE at T901 (L)/T902 (R).

8.6 REC/PLAY-BACK FREQUENCY RESPONSE ADJUSTMENT

1) Decrease –26 dB INPUT LEVEL from S.R.L setting. Record 1 kHz and 12.5 kHz signals at DOLBY-C position. (NORMAL tape/position)
2) Adjust semi-fixed resistor L/R901, R/R902 on the PCB (PJ03) that the level of differences 1 kHz and 12.5 kHz should be 0 ~ +1.0 dB.
3) Only check CrO_2 tapes/positions.
4) Decrease –26 dB INPUT LEVEL from S.R.L. setting. Record 1 kHz and 12.5 kHz signals at DOLBY-C position. (METAL tape/position)
5) Adjust the semi-fixed resistor R913 that the level of difference 1 kHz and 12.5 kHz should be 0 ~ +1.0 dB.

8.7 REC/PLAY-BACK LEVEL ADJUSTMENT

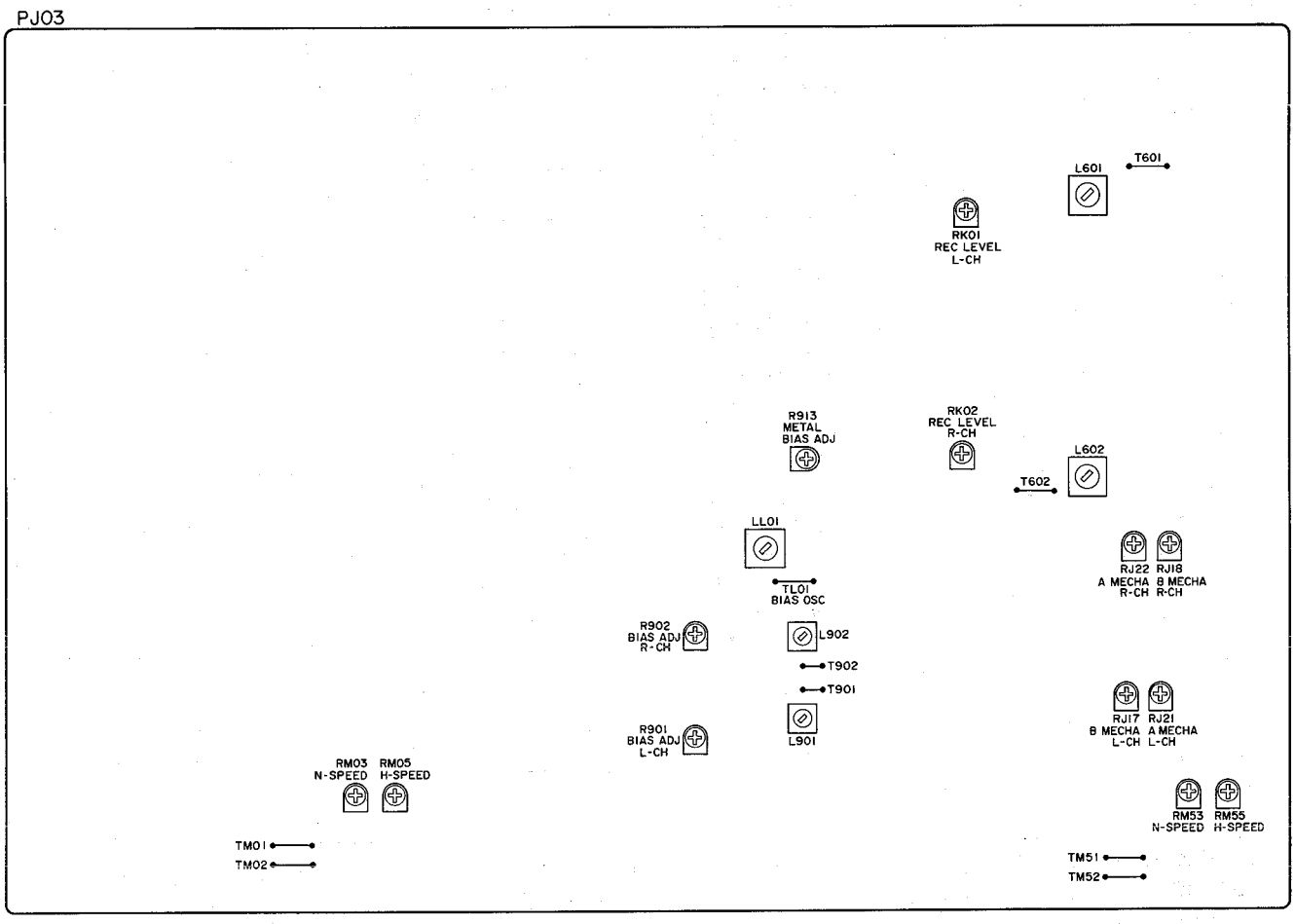
1) By NORMAL tape/position, set O.R.L setting and set monitor level scale 0 dB.
2) Do REWIND and PLAY it and adjust semi-fixed resistor L/RK01, R/RK02 to be 1 kHz level within ±0.5 dB.
3) Only check CrO_2 and METAL tapes/positions. In these case, to be 1 kHz level within ±1.0 dB.

8.8 REC/PLAY-BACK FREQUENCY RESPONSE CHECK DOLBY NR

1) Decrease –26 dB INPUT LEVEL from S.R.L setting. Record 1 kHz and 12.5 kHz signals at DOLBY B position. (NORMAL tape/position)
2) REWIND and PLAY it, and read difference level at 1 kHz and 12.5 kHz.
3) Do this same thing to CrO_2 and METAL tape/position.
4) Do same check at DOLBY C position.

Remarks:
1) Within specifications.

ADJUSTMENT POINT COMPONENT SIDE



◆サービス　ルーチン

STOP KEYとREC MUTEを押しながらPOWER ONするとサービスルーチンにはいります。
注意：
POWER ON後4秒間はKEYを受付けません。

1) ENDLESS PLAY
PLAY KEYを押すとPLAY状態となります。テープエンドになったら頭まで巻戻して再びPLAYとなります。これを繰り返します。
STOP KEYでこのモードは解除されます。

2) QUICK REC
REC KEYを押すとダイレクトにREC状態となります。
REC中にREW KEYを押すとREC開始地点まで戻り自動的にPLAYとなります。
STOP KEYでこのモードは解除されます。

3) FL CHECK
RESET KEYを押すとFLが全点灯します。
この状態でD-MODE KEYを押すとセグメントを1つだけ順に消灯していきます。
STOP KEYでこのモードは解除されます。

電源を切ってU-COMがリセットされるまでサービス　ルーチンは有効です。

9. SERVICE ROUTINE

Making Power ON while pressing Stop Key and REC MUTE Key results in Service Routine.

NOTE:
Key is not accepted until 4 seconds passed.

Service Routine has 4 modes as follows.

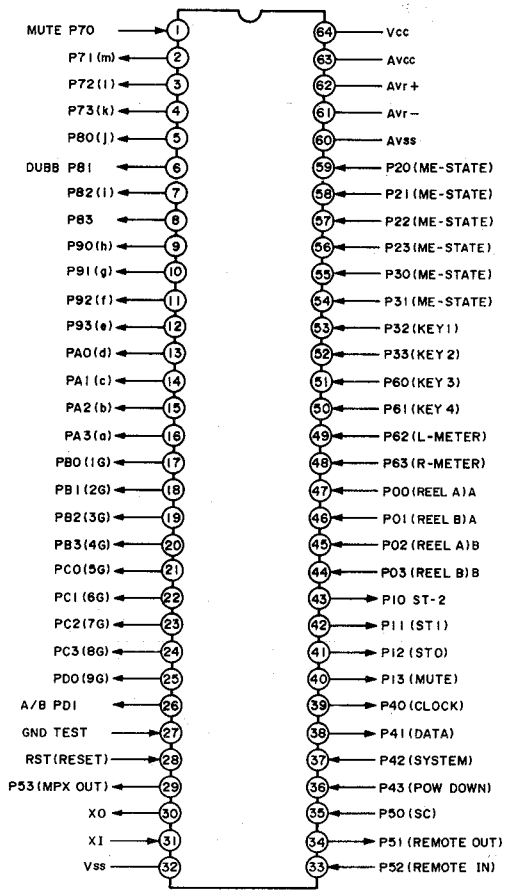
1. Endless Play
   Press Play Key to make Play mode. At the end of a Tape it is turned back to it's head and is played again.
   This Process is repeated automatically.
   Pressing Stop Key releases this mode.

2. Quick Rec
   Press Rec Key to make Rec mode directly. If Rew Key is pressed during Rec mode of a Tape is returned to the starting point of recording and then it is played automatically.
   Pressing Stop Key releases this mode.

3. FL Check
   Press RESET Key to light all of FL. Under this state press D-MODE Key to turn off the light of each Segment one by one.
   Pressing Stop Key releases this mode.

Only above-mentioned Key can be accepted by Service Routine. Service Routine is effective until Power becomes OFF and μ-COM is reset.

10. MICRO-PROCESSOR DATA



Pin Nbr.	Pin Name	I / O	Action	Function
1	P70	O	L	MUTE
2	P71 (m)	O	H	FL Display Anode Drive
3	P72 (l)	O	H	
4	P73 (k)	O	H	
5	P80 (j)	O	H	
6	P81	O	H	DUBB
7	P82 (i)	O	H	FL Display Anode Drive
8	P83	O	H	Clock
9	P90 (h)	O	H	FL Display Anode Drive
10	P91 (g)	O	H	
11	P92 (f)	O	H	
12	P93 (e)	O	H	
13	PA0 (d)	O	H	
14	PA1 (c)	O	H	
15	PA2 (b)	O	H	
16	PA3 (a)	O	H	
17	PB0 (1G)	O	H	FL Display Grid Drive
18	PB1 (2G)	O	H	
19	PB2 (3G)	O	H	
20	PB3 (4G)	O	H	
21	PC0 (5G)	O	H	
22	PC1 (6G)	O	H	
23	PC2 (7G)	O	H	
24	PC3 (8G)	O	H	
25	PD0 (9G)	O	H	
26	PD1	O	H/L	A/B
27	TEST	–	–	GND
28	RST (RESET)	I	L	µ-Processor Reset
29	P53 (MPX OUT)	O	H	MPX Control Output
30	XO	O	–	OSC
31	XI	I	–	OSC
32	Vss	–	–	GND

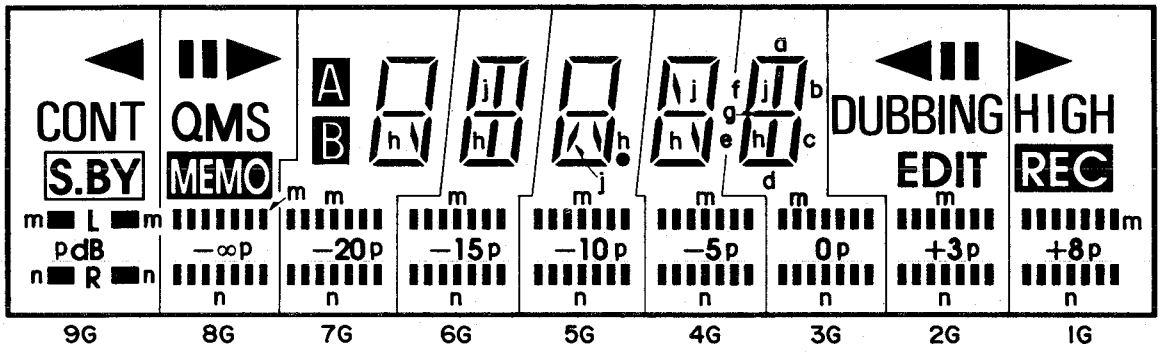
Pin Nbr.	Pin Name	I / O	Action	Function
33	P52 (REMOTE IN)	I	L	Remote Input
34	P51 (REMOTE OUT)	O	L	Remote Output
35	P50 (SC)	I	–	Clock In
36	P43 (POW DOWN)	I	H	Power Off Detector (INT2)
37	P42 (SYSTEM)	I	H	System Select
38	P41 (DATA)	O	H	Dolby, Rec Meter, Volume, Motor, Speed, On/Off, Solenoid
39	P40 (CLOCK)	O	H/L	HA12155, 74HC4094
40	P13 (MUTE)	O	H/L	Rec. Mute
41	P12 (ST 0)	O	H/L	HA12155 (Dolby, Rec-Amp, Meter, Volume) Strobe
42	P11 (ST 1)	O	H/L	Motor, Speed, On/Off, Solenoid B
43	P10 (ST 2)	O	H/L	Motor, Speed, On/Off, Solenoid A
44	P03 (REEL B) B	I	H/L	Reel
45	P02 (REEL A) B	I	H/L	Reel
46	P01 (REEL B) A	I	H/L	Reel
47	P00 (REEL A) A	I	H/L	Reel
48	P63 (R-METER)	I	DC	R-ch. Level Meter DC Input
49	P62 (L-METER)	I	DC	L-ch. Level Meter DC Input
50	P61 (KEY 4)	I	DC	Key Switch
51	P60 (KEY 3)	I	DC	
52	P33 (KEY 2)	I	DC	
53	P32 (KEY 1)	I	DC	
54	P31 (ME-STATE)	I	DC	Mechanism State
55	P30 (ME-STATE)	I	DC	
56	P23 (ME-STATE)	I	DC	
57	P22 (ME-STATE)	I	DC	
58	P21 (ME-STATE)	I	DC	
59	P20 (ME-STATE)	I	DC	
60	Avss	–	–	GND
61	Avr -	–	–	GND
62	Avr +	–	–	+5V
63	Avcc	–	–	+5V
64	Vcc	–	–	+5V

11. FL DISPLAY

11.1 TERMINAL CONNECTION

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
ELECTRODE	F1	F1	NP	NP	9G	8G	7G	6G	NC	5G	4G	3G	2G	1G	NC	NC	P1	P2	P3	
TERMINAL NO.		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
ELECTRODE		P4	P5	P6	P7	NP	NP	P8	P9	P10	P11	P12	P13	NP	NP	NP	NP	NP	F2	F2

Note F : Filament NP : No Pin
G : Grid NC : No Connection
P : Anode



11.2 INTERNAL CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P 1			a	a	a	a	a		
P 2			b	b	b	b	b		
P 3			c	c	c	c	c		
P 4			d	d	d	d	d		
P 5		▯▯	e	e	e	e	e	▯▯	
P 6	◁	▷	f	f	f	f	f	◁	▷
P 7	CONT	QMS	g	g	g	g	g	DUBBING	HIGH
P 8	S.BY	MEMO	h	h	h	h	h	EDIT	REC
P 9	L		A	j	j	j	j		
P10	R		B		●				
P11	m	m	m	m	m	m	m	m	m
P12	n	n	n	n	n	n	n	n	n
P13	p	p	p	p	p	p	p	p	p

12. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R＊＊＊ : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W
R＊＊＊ : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W

① —— Resistance value

Examples ;
① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C＊＊＊ : CERAMIC CAP.
1) DD1x x x x 370, Ceramic capacitor
Disc type
① ② Temp.coeff.P350~N1000,50V
② —— Capacity value
① —— Tolerance

Examples
①Tolerance (Capacity deviation)
±0.25pF ... 0
±0.5pF ... 1
±5% ... 5
＊ Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...±0.25pF
6pF~ 10pF...±0.5pF
12pF~ 560pF...±5%
②Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C＊＊＊ : CERAMIC CAP.
1) DK16 x x x 300, High dielectric constant ceramic capacitor
(1) Disc type
Temp.chara. 2B4, 50V
—— Capacity value

Examples
②Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C＊＊＊ : ELECTROLY CAP.(⧺), FILM CAP.(⧻)
1) EA x x x x x x 10, Electrolytic capacitor
One-way lead type, Tolerance ±20%
(1) (2)
(2) —— Working voltage
(1) —— Capacity value

Examples
(1)Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...118
		2200μF...228

(2)Working voltage

6.3V...006	25V...025	
10V...010	35V...035	
16V...016	50V...050	

2) DF15 x x x 350 } Plastic film capacitor
DF15 x x x 310 } One-way type, Mylar ±5% 50V
DF16 x x x 310 Plastic film capacitor
One-way type, Mylar ±10% 50V
①
—— Capacity value

Examples
(1)Capacity value

0.001μF(1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

NOTE : 1) The above CODES (R＊＊＊,R＊＊＊,C＊＊＊,C＊＊＊ and (C＊＊＊) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts(**RI05, DD4, DK4**).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows ;
1. KOA Corporation

Part No.	Type No.	Description
NH05 x x x 140	RF25S x x x x Ω J	(±5% 1/4W)
NH05 x x x 120	RF50S x x x x Ω J	(±5% 1/2W)
NH85 x x x 110	RF73B2A x x x x Ω J	(±5% 1/10W)
NH95 x x x 140	RF73B2E x x x x Ω J	(±5% 1/4W)

＊ Resistance value — Resistance value (0.1-10kΩ)

2. Matsushita Electronic Components Co., Ltd

Part No.	Type No.	Description
NF05 x x x 140	ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		

＊ Resistance value — ＊ Resistance value

Examples :
＊ Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

ABBREVIATION AND MARKS

1	ANT.	: ANTENNA	2	BATT.	: BATTERY
3	CAP.	: CAPACITOR	4	CER.	: CERAMIC
5	CONN.	: CONNECTING	6	DIG.	: DIGITAL
7	HP	: HEADPHONE	8	MIC.	: MICROPHONE
9	μ-PRO	: MICROPROCESSOR	10	REC.	: RECORDING
11	RES.	: RESISTOR	12	SPK	: SPEAKER
13	SW	: SWITCH	14	TRANSF.	: TRANSFORMER
15	TRIM.	: TRIMMING	16	TRS.	: TRANSISTOR
17	VAR.	: VARIABLE	18	X'TAL	: CRYSTAL
19			20		
21			22		
23			24		
25			26		
27			28		
29			30		

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

[VERS. : VERSION. U : U.S.A. F : Japan, K : Far East, /XX : Europe]

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION	PART NO. (For U, F)
			PJ03-AUDIO / SUPPLY CIRCUIT BOARD	
			PJ03-CAPACITORS	
CJ18		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
CJ19		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
CJ20		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
CK09		4822 122 31211	CER. 100pF ±10% 500V	DK16101550
CK10		4822 122 31211	CER. 100pF ±10% 500V	DK16101550
CL04		4822 121 43774	FILM 0.012µF ±10% 250V	DF76123530
CS01		4822 122 32185	CER. 10pF ±0.5pF 50V	DD11100300
CS02		4822 122 32185	CER. 10pF ±0.5pF 50V	DD11100300
CU01		4822 124 80997	BACKUP 0.047F 5.5V	EX47300540
CU02		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
CU04		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
CW06		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C628		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
C629		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
C631		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C801		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C802		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C805		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C806		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C907		4822 122 31211	CER. 100pF ±10% 500V	DK16101550
C908		4822 122 31211	CER. 100pF ±10% 500V	DK16101550
C911		4822 121 43775	FILM 560pF ±10% 250V	DF76561530
C912		4822 121 43775	FILM 560pF ±10% 250V	DF76561530
C913		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C914		4822 122 30103	CER. 0.022µF +80% -20% 50V	DK18223310
C916		4822 122 40103	CER. 4.7pF ±0.25pF 50V	DD10050300
			PJ03-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR, ±10% 50V : CJ01~CJ04, CJ13~CJ16, CK07, CK08, CU22~CU26, CW01, CW02, CW21, CW22, C627, C903, C904	
C***			ELECTROLYTIC CAPACITOR, ±20% : CJ05, CJ06, CJ11, CJ12, CJ17, CJ21, CK01~CK06, CL03, CL05, CS05, CS06, CU03, CW03, CW04, CW23, CW24, C601~C606, C613~C618, C621~C626, C630, C803, C804, C823~C826, C831, C851, C852, C915	

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION	PART NO. (For U, F)
C***			PLASTIC FILM CAPACITOR, ±5% 50V : CS03, CS04, C619, C620, C905, C906, C909, C910	
C***			PLASTIC FILM CAPACITOR, ±10% 50V : CJ07~CJ10, CL01, CL02, C607~C612, C901, C902	
			PJ03-RESISTORS	
RJ17		4822 100 11351	10K Ω TRIM.	RA01030780
RJ18		4822 100 11351	10K Ω TRIM.	RA01030780
RJ21		4822 100 11351	10K Ω TRIM.	RA01030780
RJ22		4822 100 11351	10K Ω TRIM.	RA01030780
▲RJ25		4822 115 90166	10 Ω ±2% 1/4W, FUSE	NF02100140
RK01		4822 100 11373	4.7K Ω TRIM.	RA04720780
RK02		4822 100 11373	4.7K Ω TRIM.	RA04720780
RL02		4822 050 23308	3.3 Ω ±5% 1/4W	GG05033140
▲RL03		4822 113 90119	22 Ω ±2% 1/4W, FUSE	NF02220140
RM03		4822 100 20681	2.2K Ω TRIM.	RA02220780
RM05		4822 100 20681	2.2K Ω TRIM.	RA02220780
RM53		4822 100 20681	2.2K Ω TRIM.	RA02220780
RM55		4822 100 20681	2.2K Ω TRIM.	RA02220780
RS06		4822 050 22262	2.2K Ω ±5% 1/4W	GG05222140
▲R626		4822 115 90166	10 Ω ±2% 1/4W, FUSE	NF02100140
▲R801		4822 113 90107	4.7 Ω ±5% 1/4W, FUSE	NH05047140
▲R821		4822 116 60306	1 Ω ±5% 1/2W, FUSE	NH05010120
▲R822		4822 116 60307	1 Ω ±5% 1/4W, FUSE	NH05010140
▲R831		4822 113 90107	4.7 Ω ±5% 1/4W, FUSE	NH05047140
R833		4822 050 24701	470 Ω ±5% 1/4W	GG05471140
R834		4822 050 24701	470 Ω ±5% 1/4W	GG05471140
▲R851		4822 115 90166	10 Ω ±2% 1/4W, FUSE	NF02100140
▲R856		4822 115 90166	10 Ω ±2% 1/4W, FUSE	NF02100140
R857		4822 050 21502	1.5K Ω ±5% 1/2W	GG05152120
R901		4822 100 11373	4.7K Ω TRIM.	RA04720780
R902		4822 100 11373	4.7K Ω TRIM.	RA04720780

[VERS. : VERSION. U : U.S.A. F : Japan, K : Far East, /XX : Europe]

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION		PART NO. (For U, F)
			PJ03-RESISTORS		
			(COMMON)		
R***			CARBON FILM FIXED RESISTOR, ±5% 1/6W : RJ01~RJ16, RJ19, RJ20, RJ23, RJ24, RJ26~RJ32, RK03~RK08, RK11~RK19, RK21~RK26, RK31~RK36, RK41~RK46, RK51~RK56, RK61~RK66, RK71~RK76, RL01, RL04~RL06, RM01, RM02, RM04, RM06~RM10, RM51, RM52, RM54, RM56~RM60, RR01~RR05, RS01~RS05, RS07~RS10, RU01~RU18, RU21, RU22, RU24~RU28, RU33~RU50, RU91~RU94, RW01~RW04, (RW05, RW06 [U/F]), RW21~RW26, R601~R622, R624, R627~R631, R823, R832, R852~R855, R858, R903~R910, R912		
			PJ03-SEMICONDUCTORS		
DK01					
~		4822 130 32362	DIODE	ISS254	HD20022210
DK08					
DL01		4822 130 32362	DIODE	1SS254	HD20022210
DM01		4822 130 32508	DIODE	RL103E	HD20003000
DM51		4822 130 32508	DIODE	RL103E	HD20003000
DR02		4822 130 32362	DIODE	1SS254	HD20022210
DS01		4822 130 32362	DIODE	1SS254	HD20022210
DS02		4822 130 32362	DIODE	1SS254	HD20022210
▲ DU01		4822 130 32508	DIODE	RL103E	HD20003000
▲ DU02		4822 130 32508	DIODE	RL103E	HD20003000
▲ DU03		4822 130 32508	DIODE	RL103E	HD20003000
▲ D801					
~		4822 130 32508	DIODE	RL103E	HD20003000
▲ D804					
D805		4822 130 32362	DIODE	1SS254	HD20022210
D806		4822 130 32362	DIODE	1SS254	HD20022210
▲ D821					
~		4822 130 32508	DIODE	RL103E	HD20003000
▲ D824					
D831		4822 130 32508	DIODE	RL103E	HD20003000
D832		4822 130 80272	ZENER	MTZJ7.5C	HD30751000
D851					
~		4822 130 32362	DIODE	1SS254	HD20022210
D857					
D858		4822 130 33759	ZENER	MTZJ4.7C	HD30471000
D901		4822 130 32362	DIODE	1SS254	HD20022210

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION		PART NO. (For U, F)
QJ01		4822 209 62249	IC	CXA1115BP	HC10022250
QJ02		4822 130 60766	TRS. DIG.	DTA114ES	BA10007210
QJ03		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QK01		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QK02		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QK03		4822 130 42298	TRS.	2SC1740S	HT30001000
QK04		4822 130 42298	TRS.	2SC1740S	HT30001000
QK05		4822 130 60766	TRS. DIG.	DTA114ES	BA10007210
QK06		4822 130 60588	TRS. DIG.	DTC114ES	BA20010210
QK07		4822 130 60588	TRS. DIG.	DTC114ES	BA20010210
QK08		4822 130 60766	TRS. DIG.	DTA114ES	BA10007210
QL01		4822 130 61886	TRS.	2SD1292 (Q)	HT412921Q0
QL02		4822 130 61886	TRS.	2SD1292 (Q)	HT412921Q0
QL03		4822 130 42715	TRS.	2SA933S	HT10001000
QL04		4822 130 60588	TRS. DIG.	DTC114ES	BA20010210
QM01		4822 130 61725	TRS.	2SD2010	HT42010000
QM02		4822 130 61725	TRS.	2SD2010	HT42010000
QM03		4822 130 63042	TRS. DIG.	DTA125TS	BA10032210
QM04		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QM05		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QM06		4822 130 60588	TRS. DIG.	DTC114ES	BA20010210
QM51		4822 130 61725	TRS.	2SD2010	HT42010000
QM52		4822 130 61725	TRS.	2SD2010	HT42010000
QM53		4822 130 63042	TRS. DIG.	DTA125TS	BA10032210
QM54		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QM55		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QM56		4822 130 60588	TRS. DIG.	DTC114ES	BA20010210
QR01		4822 130 42298	TRS.	2SC1740S	HT30001000
QR02		4822 130 60766	TRS. DIG.	DTA114ES	BA10007210
QS01		4822 130 63673	F.E.T.	2SK373 (Y)	HF203731Y0
QS02		4822 130 63673	F.E.T.	2SK373 (Y)	HF203731Y0
QS03		4822 130 42298	TRS.	2SC1740S	HT30001000
QS04		4822 130 42298	TRS.	2SC1740S	HT30001000
QS05		4822 209 83825	IC	NJM79L05A	HC39105090
QS06		4822 130 60766	TRS. DIG.	DTA114ES	BA10007210
QS07		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QS08		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QU01		4822 209 33799	μ-COM	MB88626BP-G-162-SH	HU461TF000
QU02		4822 209 30307	IC	PC74HC4094P	HC709449B0
QU03		4822 209 30307	IC	PC74HC4094P	HC709449B0
QU04		4822 209 30307	IC	PC74HC4094P	HC709449B0
QU05		4822 209 31539	IC	PC74HCU04P	HC700449U0
QU06		4822 209 10247	IC	HEF4011BP	HC401149B0
QU07		4822 209 70932	IC	LM2904N	HC10079170
QU08		4822 209 70932	IC	LM2904N	HC10079170
QU09		4822 209 10247	IC	HEF4011BP	HC401149B0
QU10					
~		4822 130 61189	TRS. DIG.	DTC114TS	BA20017210
QU13					
QU14		4822 130 61188	TRS. DIG.	DTC144TS	BA20028210
QW21		4822 130 61723	TRS. DIG	DTC323TS	BA20028210
QW22		4822 130 61723	TRS. DIG	DTC323TS	BA20028210

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POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION	PART NO. (For U, F)
Q601		4822 209 32748	IC HA12155NT	HC10101010
Q602		4822 130 60588	TRS. DIG. DTC114ES	BA20010210
⚠Q801		4822 209 31629	IC NJM78M15FA	HC38515090
⚠Q821		4822 209 70385	IC L78MR05FA	HC10205030
Q851		4822 130 42715	TRS. 2SA933S	HT10001000
Q852		4822 130 42682	TRS. DIG. DTA114ES	BA10010210
Q853		4822 130 61189	TRS. DIG. DTC114TS	BA20017210
Q901		4822 209 72874	IC μPC1297CA	HC10200060
Q902		4822 130 60766	TRS. DIG. DTA114ES	BA10007210
			PJ03-MISCELLANEOUS	
JR01		4822 267 41009	TERMINAL, 2P RCA	YT02020890
JW01		4822 157 63605	TERMINAL, 4P	YT02040940
⚠J091	/01	4822 277 21763	SLIDE SW. VOLTAGE SEL.	SS02021240
LJ01		4822 157 53521	CHOKE COIL 22mH	LC22260710
LJ02		4822 157 53521	CHOKE COIL 22mH	LC22260710
LK01		4822 157 53521	CHOKE COIL 22mH	LC22260710
LK02		4822 157 53521	CHOKE COIL 22mH	LC22260710
LL01		4822 148 81074	OSC TRASF. 105KHz	TC10140350
L601		4822 157 63828	M.P.X. COIL	LS10415020
L602		4822 157 63828	M.P.X. COIL	LS10415020
⚠L801	/01	4822 146 21748	POWER TRANSF. 115V/230V	TS15426030
⚠L801	/02	4822 146 21747	POWER TRANSF. 220V/230V/240V	TS15426020
⚠L801	/05	4822 146 21747	POWER TRANSF. 220V/230V/240V	TS15426020
⚠L801	/07	4822 146 21747	POWER TRANSF. 220V/230V/240V	TS15426020
⚠L801	U/F		POWER TRANSF. 100V/120V	TS15426010
L901		4822 157 63829	OSC TRANSF.	TC10110030
L902		4822 157 63829	OSC TRANSF.	TC10110030
SR01	U/F		SLIDE SW.	SS02021480
XU01		4822 242 72066	CER. RESONATOR CST8.00MT	FQ08004010
			PJ04-MIC AMP. CIRCUIT BOARD [/01 /02 /05 /07]	
			PJ04-CAPACITORS (COMMON)	
C***			ELECTROLYTIC CAPACITOR, ±20% : CW52~CW56	
			PJ04-RESISTORS	
RV01		4822 100 30142	10K Ω(X) x 2 VAR.	RM01030690
			PJ04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RESISTOR, ±5% 1/6W : RW51, RW53~RW62	

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION	PART NO. (For U, F)
			PJ04-SEMICONDUCTORS	
QW51		4822 209 83163	IC LM833N	HC10020360
			PJ04-MISCELLANEOUS	
JW51		4822 265 20555	JACK, PHONE (BLK)	YJ01003490
JW51		4822 267 31611	JACK, PHONE (GLD)	YJ01003600
			PJ05-HEADPHONE AMP. CIRCUIT BOARD [U/F]	
			PJ05-CAPACITORS (COMMON)	
C***			ELECTROLYTIC CAPACITOR, ±20% : CG01~CG06	
			PJ05-RESISTORS	
RV02			10K Ω(X) x 2 VAR.	RM01030690
			PJ05-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RESISTOR, ±5% 1/6W : RG01~RG14	
			PJ05-SEMICONDUCTORS	
QG01			IC LM833N	HC10020360
			PJ05-MISCELLANEOUS	
JG01			JACK, PHONE (BLK)	YJ01003490
JG01			JACK, PHONE (GLD)	YJ01003600
			PU03-FRONT DISPLAY CIRCUIT BOARD	
			PU03-CAPACITORS	
CU51		4822 126 11558	CER. 0.1μF ±20% 50V	DA17104110
CU61		4822 126 11558	CER. 0.1μF ±20% 50V	DA17104110
CU71		4822 126 11558	CER. 0.1μF ±20% 50V	DA17104110
CU81		4822 126 11558	CER. 0.1μF ±20% 50V	DA17104110
			PU03-CAPACITORS (COMMON)	
			(CR02 [U/F])	
			PU03-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RESISTOR, ±5% 1/6W : (RR06, RR07 [U/F])	
			PU03-SEMICONDUCTORS	
QR03	U/F		PHOTO UNIT	HW10001210
			PU03-MISCELLANEOUS	
VU01		4822 130 91285	DISPLAY UNIT	HQ30914060

[VERS. : VERSION. U : U.S.A. F : Japan, K : Far East, /XX : Europe]

POS. NO.	VER. COLOR	PART NO. (For Europe)	DESCRIPTION	PART NO. (For U, F)
			PU04-FRONT KEY SW. CIRCUIT BOARD	
			PU04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RESISTOR, ±5% 1/6W : RU19, RU20, RU23, RU29~RU32, RU51~RU58, RU61~RU68, RU71~RU78, RU81~RU89	
			PU04-MISCELLANEOUS	
SS01		4822 277 21764	SLIDE SW.	SS02030680
SS02		4822 277 21764	SLIDE SW.	SS02030680
SS03		4822 277 21764	SLIDE SW.	SS02030680
SU51 ~ SU58		4822 276 20508	PUSH SW. TACT	SP01011280
SU62 ~ SU66		4822 276 20508	PUSH SW. TACT	SP01011280
SU68		4822 276 20508	PUSH SW. TACT	SP01011280
SU74		4822 276 20508	PUSH SW. TACT	SP01011280
SU75		4822 276 20508	PUSH SW. TACT	SP01011280
SU82		4822 276 20508	PUSH SW. TACT	SP01011280
SU84		4822 276 20508	PUSH SW. TACT	SP01011280
			PU05-STANDBY SW. CIRCUIT BOARD	
SU83		4822 276 20508	PUSH SW. TACT	SP01011280

NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.